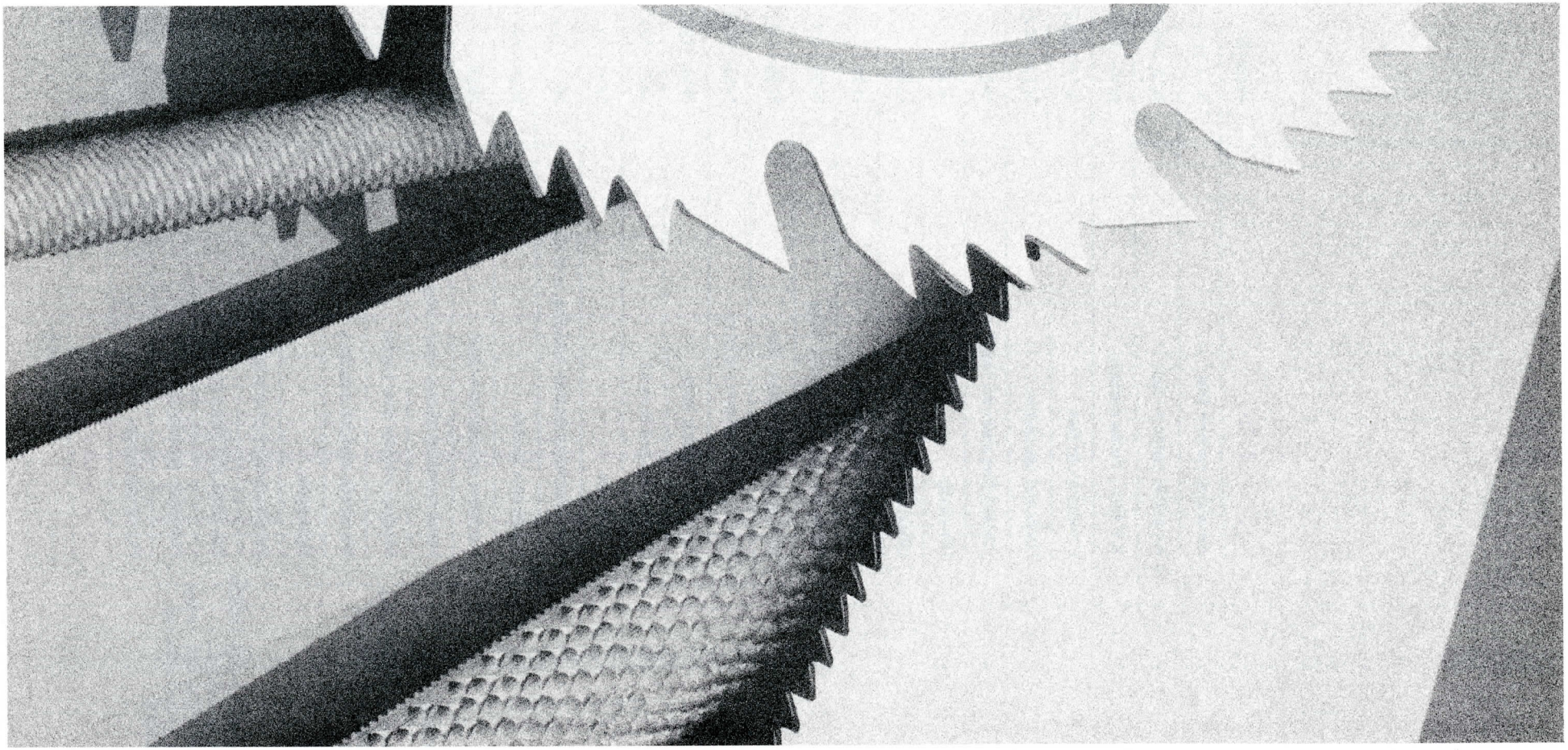

Cooper Tools

Nicholson®

Nicholson

The Nicholson® File Company, formed in 1864, became the first successful manufacturer of machine-made files. Today, the wide Nicholson® range has increased in scope and size and includes files, rasps, circular saw blades, bandsaw blades, and handsaws, manufactured to uncompromising standards of quality.

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Key to symbols

|←L→| Overall length

Note:
N/S No. is an abbreviation for NIDA/SIDA Number.

The following manuals and instruction leaflets are available. Please ask your local distributor or Cooper representative for copies.

- The Guide to Files and Filing
- Facts about Rotary Files and Burs
- Saw Guide
- Bandsaws—General Recommendations

Please order by using catalog numbers or when shown NIDA/SIDA Numbers. Each file has been assigned a catalog number to expedite the entry and shipment of your order. To faciltate order processing, please determine catalog number in the following manner:—8" Mill Bastard Nicholson Brand 08497.

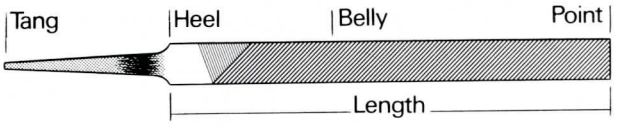
N is an abbreviation for Nicholson.

Nicholson® Files and Rasps

The following information is included to help you make the right choice of file to meet your particular requirements.

File Terminology:

Length



Length is measured exclusive of tang, from point to heel. Desired stroke length, type of material and its size will determine length required.

Shape

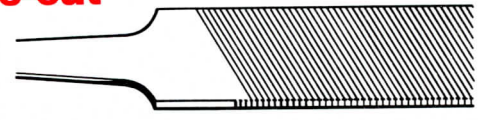
Area to be filed will determine specific cross section-round, square, knife, flat, etc.-to be used.

Coarseness

Work to be accomplished, roughing or finishing, will determine type of teeth and coarseness for each application. Most files are available with 3 grades of cut: bastard-cut, second-cut and smooth-cut.
The degree of coarseness is greater in longer files, but differences between bastard, second cut and smooth are proportionate.

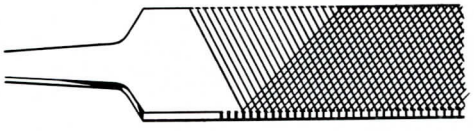
Kinds of teeth

Single-cut



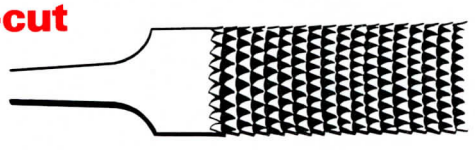
Single set of parallel, diagonal rows of teeth. Single-cut files are often used with light pressure to produce a smooth surface finish or to put a keen edge on knives, shears or saws.

Double-cut



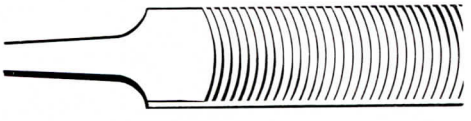
Two sets of diagonal rows of teeth. The second set of teeth is cut in the opposite diagonal direction and on top of the first set. The first set of teeth is known as the overcut while the second is called the upcut. The upcut is finer than the overcut. The double-cut file is used with heavier pressure than the single-cut and removes material faster from the workpiece.

Rasp-cut



Series of individual teeth which are formed by a single-pointed tool. This produces a rough cut that is used primarily on wood, hooves, aluminum and lead.

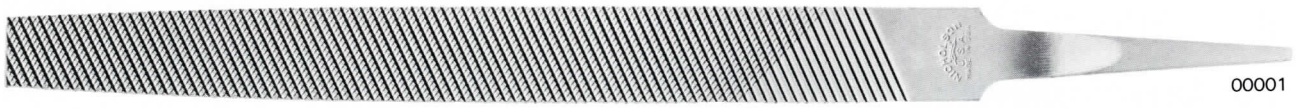
Curved-cut



Teeth arranged in curved contours across the file face. The curved-cut file is normally used in automotive body shops for smoothing body panels.

American pattern files

Aluminum files – type "A" flat



00001

Type "A" aluminum files have a special tooth construction which experience shows to be very effective in eliminating clogging. A smooth finish can be readily obtained by using a shearing cut toward the left.
Made in flat and half round shapes. Double-cut. All sizes have exactly the same cut, that is, the same number of teeth per inch. Half rounds have narrow points in 6"/150mm, 8"/200mm and 10"/250mm sizes only.

←L→ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	00001	1,3/539	12
8/200	00024	3,0/1361	12
10/250	00047	7,4/3289	6
12/300	00070	11,2/5046	6

Aluminum files – type "A" half round

00113

←L→ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	00113	1,9/765	12
8/200	00136	3,0/361	12
10/250	00161	5,12/2608	6
12/300	00187	10,7/4734	6

Auger bit files

Auger bit files are designed to restore the original sharpness to the cutting edges of bits. One end of file has its edges left safe or uncut while the other end has safe sides. This construction prevents damage to surfaces adjacent to those being filed. Made in 7-inch length only.

←L→ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
7/178	00258	0,11/312	12

Bandsaw taper files with narrow edges

00498

When ordering special narrow edge bandsaw files be sure to determine width and order by appropriate catalog number.

Bandsaw taper No. 63

←L→ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	00498	1,15/879	12

Bandsaw taper slim No. 64

←L→ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	00526	1,7/652	12

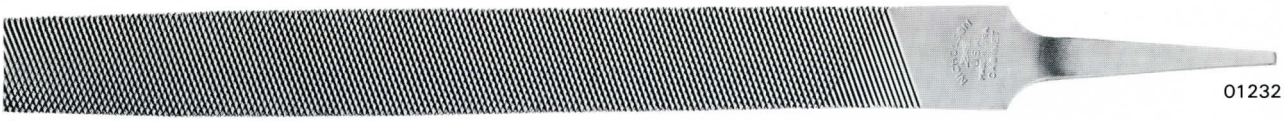
Bodifiles

A line of Bodifiles is available for those who work on automobile bodies, particularly in blending solder with sheet steel.
All "Flat" files – teeth on both sides.
All "Flat Bent" files – teeth on convex side only.
All "Flat Bent" files have tangs offset for knuckle clearance in filing large sheet metal surfaces.
For other Bodifiles see superior milled tooth section.

Code No.	Teeth Per Inch	Size	Cat. /N/S No. /No.	Band "R" "/mm	Wt. per doz. lb., oz/g
50-204 D/C	10	$1\frac{11}{32}$" x $\frac{5}{16}$" 14 Flat Bent	03103		16,10/7541
50-210 D/C	10	$1\frac{11}{32}$" x $\frac{5}{16}$" 14 Flat Bent	03129	50"/1271	16,10/7541
50-404 D/C*	20	$1\frac{11}{32}$" x $\frac{5}{16}$" 14 Flat Bent	03184	196"/4981	16,10/7541
50-407 D/C	13	$1\frac{11}{32}$" x $\frac{5}{16}$" 14 Flat Bent	03212	80"/2033	16,10/7541
50-415B S/C**	11	$1\frac{11}{32}$" x $\frac{5}{16}$" 14 Flat Bent	03271	80"/2033	16,10/7541

D/C = Double-Cut S/C = Single-Cut
*For fine finishing steel surfaces. All others used on steel or body solder or both together.
**With rounded edges.

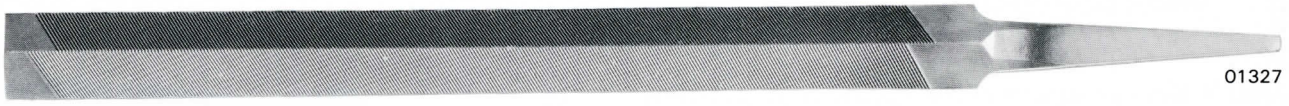
Cabinet files



Made for use by cabinetmakers and woodworkers. Cabinet files are half round in section. Their radius is larger than that of regular half round files and they are thinner. Their teeth are slightly finer than those of the wood files.

←L→ "/mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
8/200	01232	3,00/1361	12
10/250	01260	5,07/2466	6

Cantsaw files



For sharpening crosscut saws with "M" teeth, for circular saws and for saw teeth with less than 60° angle. Same number of teeth per inch as mill bastard files of equivalent length. Single-cut. Edges set and cut. Regularly supplied with cut back. "Cut backs" furnished unless "safe backs" definitely ordered.

Cut Back

←L→ "/mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	01327	1,07/652	12
8/200	01387	3,03/1446	12
10/250	01418	5,09/2523	12

Safe back

←L→ "/mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	01448	1,07/652	12

Chain saw files – Round smooth

This new round smooth chain saw file is a product of extensive research and development in the engineering laboratories of Nicholson.
Field tests by chain saw users and competitive tests by many leading chain saw manufacturers prove that the new round smooth chain saw file is the smoothest-feeling, fastest-cutting and best-finished.

Code No.	Cat. /N/S No. /No.	←L→ "/mm	⅟₄ "/mm	Wt. per doz. lb., oz/g	Shelf Pack
83	01753	8/200	$\frac{3}{16}$/4.76	0,13/369	12
835	01876	8/200	$\frac{7}{32}$/5.55	1,02/510	12
84	01964	8/200	$\frac{1}{4}$/6.35	1,06/624	12
85	02082	8/200	$\frac{5}{16}$/7.93	2,03/992	12
86	02150	8/200	$\frac{3}{8}$/9.52	3,00/1361	12
610	01576	6/150	$\frac{1}{8}$/3.17	0,07/198	12
620	01609	6/150	$\frac{5}{32}$/3.96	0,08/227	12

Chain saw files—flat

Code number together with words "Flat Chain Saw Files" are stamped on tang for identification. For cutter-raker type (2 round edges).

Code No.	Cat./N/S No./No.	|←→| "/mm	Wt. per doz. lb., oz/g	Shelf Pack
18	02215	8/200	2,14/1304	12

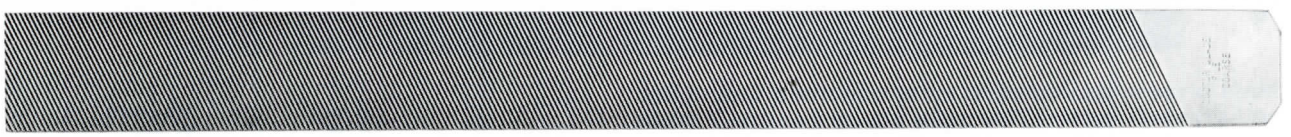
Crosscut—Great American

02435

Originally made for sharpening saws of Great American type. Now used for sharpening varieties of crosscut saws. Same number of teeth per inch as mill bastard files of same lengths. Rounded backs of files used to deepen rounded gullets of saw teeth. Single-cut. Rounded back and thin edge are also cut.

|←→| "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
8/200	02435	3,04/1474	12
10/250	02465	6,04/2835	12

Doctor blade files



Doctor blade files are made for filing doctor blades in the cloth-printing industry. Made in one length only—14" without tang—parallel in width and thickness. Coarse Cut only.

|←→| "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
14/356	02828	16,01/7286	6

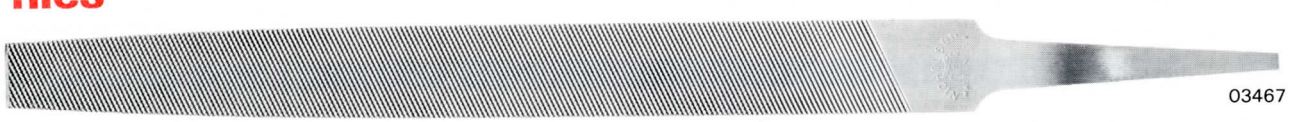
Double Ender Files

02926

Single-cut on sides and edges from points to center giving filer full use of file. Six handles supplied with each dozen Double Ender Files.

|←→| "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	02884	0.11/312	12
7/178	02905	0.13/369	12
8/200	02926	1.04/567	12
9/225	02949	2.00/907	12
10/250	02969	2.06/1077	12

Flat files

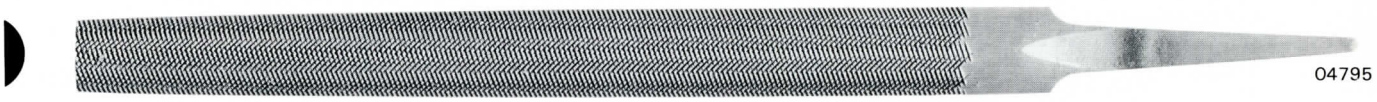


03467

Flat files are used by machinists, machinery builders, ship and engine builders, repair men and others who require rapid removal of metal. They are rectangular in cross section and taper slightly towards point in both width and thickness. Double-cut on both sides, single-cut on both edges.

|←→| "/mm	Catalog & Nida/Sida Numbers			Wt. per doz. lb., oz/g	Shelf Pack
	Bastard	Second Cut	Smooth		
4/114	03367	—	03434	0,09/255	12
6/150	03467	03500	03533	1,09/709	12
8/200	03566	03599	03632	3,12/3261	12
10/250	03665	03698	03731	7,03/3261	6
12/300	03764	03797	03830	11,04/5103	6
14/356	03863	03896	03929	16,10/7541	6
16/400	03980	—	—	24,02/10943	6

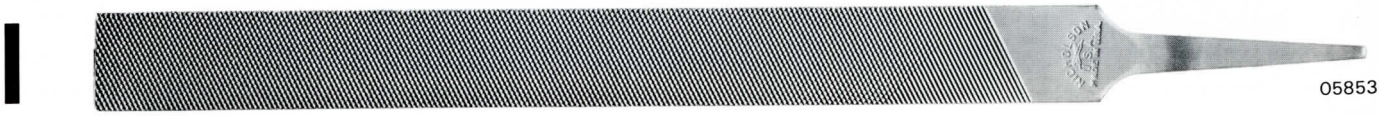
Half round files



Rounded on one side. Flat on the other. Used on concave and convex as well as flat surfaces. Backs of all half round bastard files are double-cut. The backs of all half round second cut files longer than 6 inches are double-cut, the 4 and 6 inch files are single-cut. The backs of all half round smooth files are single-cut. The flat sides of all half round files are double-cut.

|← L →|	Catalog & Nida/Sida Numbers			Wt. per doz.	Shelf
	" /mm	Bastard	Second Cut	Smooth	lb., oz/g	Pack
	4/114	04695	04729	04762	0,10/284	12
	6/150	04795	04828	04861	1,09/709	12
	8/200	04896	04927	04960	3,05/1503	12
	10/250	04995	05026	05059	6,01/2750	6
	12/300	05094	05125	05158	10,08/4763	6
	14/356	05194	05225	05258	16,04/7371	6
	16/400	05307	—	—	23,14/10830	6

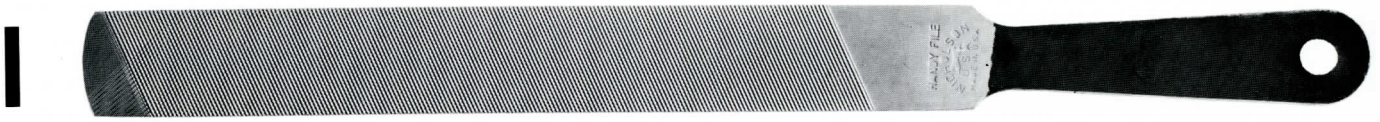
Hand files



Similar to regular flat files but taper in thickness only. Double-cut. One edge safe or uncut. Same coarseness as flat files of corresponding lengths.

|← L →|	Catalog & Nida/Sida Numbers			Wt. per doz.	Shelf
	" /mm	Bastard	Second Cut	Smooth	lb., oz/g	Pack
	6/150	—	—	05804	1,12/794	12
	8/200	05853	05886	05919	3,14/1758	12
	10/250	05968	06001	06034	7,08/3402	6
	12/300	06084	06117	—	11,06/7768	6

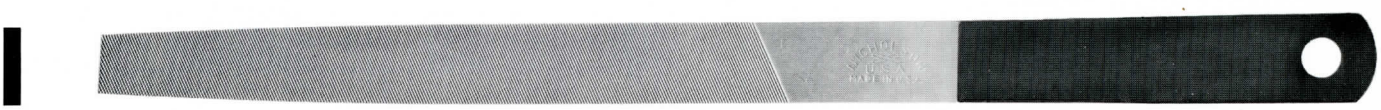
Handy file



This gives the user a combination file: single-cut on one side for sharpening edged tools and smoothing metal surfaces, double-cut on other side for rapid removal of metal. One edge is "cut" and the other is "safe" or "uncut." Convenient "hang up" hole. Length measured exclusive of handle. Available carded only.

|← L →|	Cat. /N/S	Wt. per doz.	Shelf
	" /mm	No. /No.	lb., oz/g	Pack
	8/200	06601	5,10/2268	6

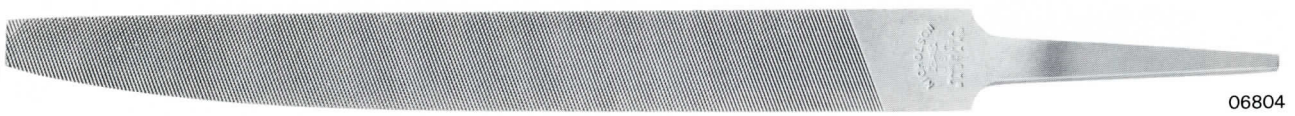
Home and garden file



Sharpens knives, scissors and garden tools. Sharpens rotary mower blades to knife-like edge and smooths nicks that tear grass. Files come skin-packed for pegboard display. Shipped in its own corrugated merchandiser for retail display. Available carded only.

|← L →|	Cat. /N/S	Wt. per doz.	Shelf
	" /mm	No. /No.	lb., oz/g	Pack
	10/250	11488	4,08/2041	12

Knife files

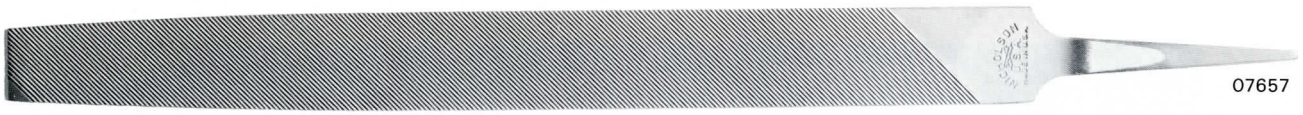


06804

Knife files are of knife blade section and used principally by tool and die makers on work having acute angles. All double-cut on sides and single-cut on sharp edge. Knife files are regularly supplied with safe backs, unless cut backs are specified.

|←L→|	Catalog & Nida/Sida Numbers			Wt. per doz.	Shelf
	"/mm	Bastard	Second Cut	Smooth	lb., oz/g	Pack
	4/114	06711	06742	06773	0,06/170	12
	6/150	06804	06836	06867	1,03/539	12
	8/200	06898	06930	06961	2,08/1134	12
	10/250	06992	07023	07054	4,10/2098	12

Long angle lathe files

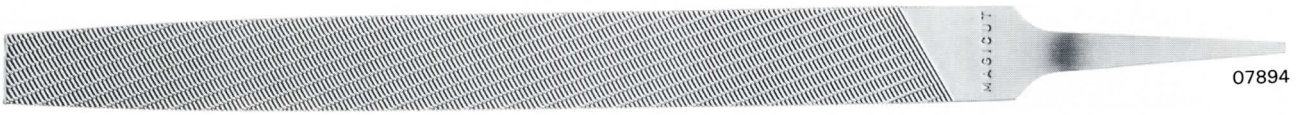


07657

Long angle lathe files are rapid, free cutting files, designed for lathe filing. Cut faster than regular mill files and leave a smoother finish. Made on flat blanks in bastard cut. Edges are safe or uncut to protect the shoulder or dog. Identified by words "Flat Long Angle" on file. All long angle files are single-cut.

|←L→|	Cat./N/S	Wt. per doz.	Shelf
	"/mm	No./No.	lb., oz/g	Pack
	10/250	07657	7,03/3260	6
	12/300	07688	11,04/5103	6
	14/356	07719	16,10/7541	6

Magicut® files

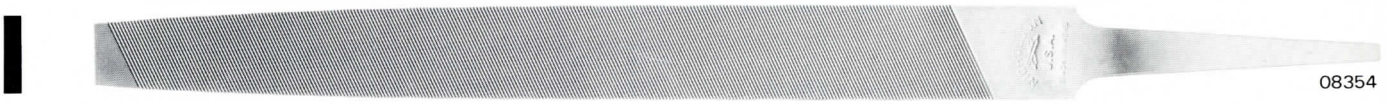


07894

Enlarged close-up shows the unique pattern of narrow chip breakers created by steep and angled serrations. This maximum cutting surface design gives rapid removal and smoother finish. "Magicut" is a machinist's all purpose file, which removes stock rapidly and leaves a smooth finish at the same time, thus eliminating the need for extra filing strokes.

|←L→|	Cat./N/S	Wt. per doz.	Shelf
	"/mm	No./No.	lb., oz/g	Pack
	8/200	07894	3,12/1701	12
	10/250	07917	3,07/3260	6
	12/303	07941	11,4/5103	6
	14/356	07965	16,10/7541	6

Mill files



08354

For sharpening mill or circular saws. Also for draw-filing and finishing metals. All sizes tapered slightly in width, 12", 14" and 16" slightly in thickness for about one-third of length. Two square edges. Single-cut on sides and edges.

|←L→| " /mm	Catalog & Nida/Sida Numbers Bastard	Second Cut	Smooth	Wt. per doz. lb., oz/g	Shelf Pack
4/113	08243	—	08306	0,08/227	12
6/150	08354	08385	08416	1,03/539	12
8/200	08497	08529	08560	2,12/1247	12
10/250	08642	08673	08704	5,07/2466	12
12/303	08737	08768	08799	9.01/4111	6
14/356	08832	—	08894	14,00/6350	6
16/400	08925	—	—	21,00/9526	6

Mill files – 1 and 2 round edges

09099

Same as regular mill files except that they have one or two round edges. Bastard cut, single-cut on sides and edges. Round edges are used where rounding gullets are preferred, as compared to sharp corners or squared gullets.

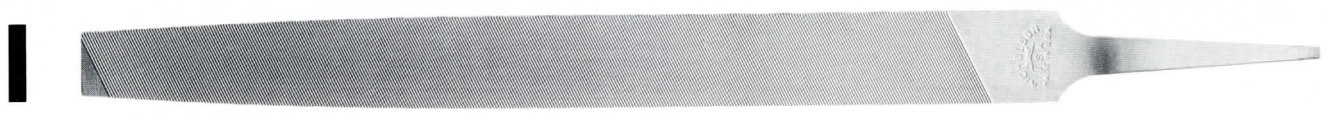
One round edge bastard cut

|←L→| " /mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
8/200	09099	2,13/1276	12
10/250	09179	5,01/2296	12

Two round edge bastard cut

|←L→| " /mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
8/200	09389	2,11/1219	12
10/280	09469	5,01/2296	12

Mill western cut files



Mill western cut files are available for those who desire fast cutting mill files. They are slightly coarser than mill bastard.

|←L→| " /mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
8/200	09641	2,12/1247	12
10/250	09658	5,07/2466	12
12/303	09677	9,01/4111	6

Pillar files

Pillar files have a rectangular cross section. They are like hand files in general shape but are narrower. They have one edge safe or uncut. Used mostly by machinists for filing slots and keyways. Available in bastard cut only.

|←L→| " /mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
8/200	11118	3,11/1673	12

Round Files


11716

Principal use is to file circular openings or concave surfaces. Tapered slightly towards point. All 4", 6", 8", 10" files are single-cut, 12" bastard and second cut are double-cut. 12" smooth is single-cut and 14" bastard is double-cut.

←→ "/mm	Dia. "/mm	Catalog & Nida/Sida Numbers Bastard	Second Cut	Smooth	Wt. per doz. lb., oz/g	Shelf Pack
4/113	—	11526	11559	11592	0,04/113	12
6/150	—	11716	11748	11781	0,14/397	12
8/200	—	11904	11936	11969	1,06/624	12
10/250	3/8"/10mm	12019	12051	12084	3,03/1446	12
12/303	1/2"/13mm	12134	12166	12199	6,13/3090	6
14/356	5/8"/16mm	12248	—	—	11,15/5415	6

Square files


12967

For filing slots, keyways and general surface filing. Larger sizes frequently preferred to corresponding flat files because of heavier section and four filing surfaces. Tapered slightly towards point. Double-cut.

←→ "/mm	Dia. "/mm	Catalog & Nida/Sida Numbers Bastard	Second Cut	Smooth	Wt. per doz. lb., oz/g	Shelf Pack
4/113	5/32"/4mm	12790	12824	12857	0,04/113	12
6/150	1/4"/6mm	12967	13000	13033	1,01/482	12
8/200	5/16"/8mm	13081	13114	13147	1,15/879	12
10/250	3/8"/10mm	13196	13229	13262	3,14/1758	12
12/303	1/2"/13mm	13310	13343	13376	8,06/3799	6
14/356	5/8"/16mm	13425	—	—	14,12/6691	6

Taper (Triangular) saw files

Triangle saw files are made for filing all types of saws with 60° angle teeth. Single-cut. Edges set and cut for filing gullets between saw teeth.
In filing handsaws, it is important to select the right file. In general, the table lists the suggested size and type of file that will give the best results.

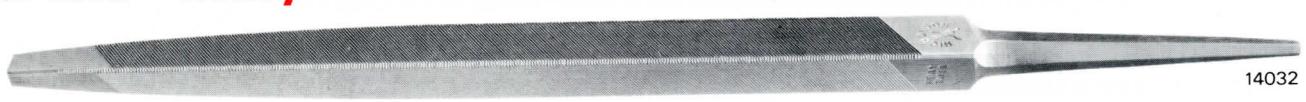
Number of Points	Files Recommended
5	7"/178mm Taper Regular
5½	7"/178mm Taper Regular
6	7"/178mm or 8"/200mm Slim
7	6"/150mm or 7"/178mm Slim
8	6"/150mm Slim 7"/178mm Extra Slim 8"/200mm Double Extra Slim
9	6"/150mm Extra Slim 7"/178 mm Double Extra Slim
10	5"/127mm or 6"/150mm Extra Slim
11	5"/127mm Extra Slim 6"/150mm Double Extra Slim
12	5"/127mm Extra Slim
13,14	5"/127mm Double Extra Slim
15,16	5"/127mm Double Extra Slim

Taper files – regular


13807

←→ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	13807	2,00/907	12
7/178	13841	2,15/1332	12
8/200	13875	4,05/1956	12
10/250	13930	7,08/3402	12

Taper files – heavy


14032

←→ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
5/140	14015	—	12
6/150	14032	—	12

Taper files – slim

14224

|←→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
4/113	14106	0,06/170	12
5/140	14162	0,09/255	12
6/150	14224	1,01/482	12
7/178	14255	1,11/765	12
8/200	14290	2,10/1191	12
10/250	14341	5,03/2353	12

Taper files – extra slim

14665

|←→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
4/113	14547	0,04/113	12
5/140	14599	0,06/170	12
6/150	14665	0,11/312	12
7/178	14698	1,03/539	12
8/200	14729	1,14/851	12

Taper files – double extra slim

15024

|←→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
5/140	14992	0,05/142	12
6/150	15024	0,09/255	12
7/178	15056	0,12/340	12
8/200	15087	1,01/482	12

Taper files – double-cut saw files (M.F.)

15334

Designed and recommended primarily for use in saw filing machines.

Taper double-cut M.F.

|←→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	15334	2,00/907	12

Taper slim double-cut M.F.

|←→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	15395	1,01/482	12
7/178	15418	1,11/765	12

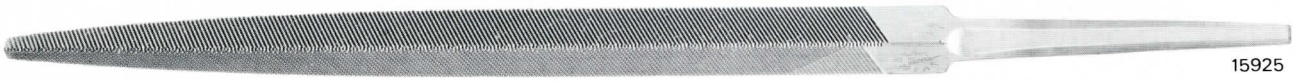
Taper extra slim double-cut M.F.

|←→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	15460	0,11/312	12
7/178	15481	1,03/539	12

Taper double extra slim double-cut M.F.

|←→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	15524	0,09/255	12
7/178	15545	0,12/340	12

Three square files



15925

Three square files are triangular in cross section, like tapers, but are double-cut and have fairly sharp corners that are slightly set and cut. These files are for general use by machinists for filing internal angles more acute than the right angle, for clearing out square corners and filing taps and cutters. Grading of cuts according to coarseness is same as Square File.

|←L→|	Catalog & Nida/Sida Numbers			Wt. per doz.	Shelf
	"/mm	Bastard	Second Cut	Smooth	lb., oz/g	Pack
	6/150	15925	15958	15991	1,15/879	12
	8/200	16036	16069	16102	4,4/1928	12
	10/250	16147	16180	16213	7,8/3402	12

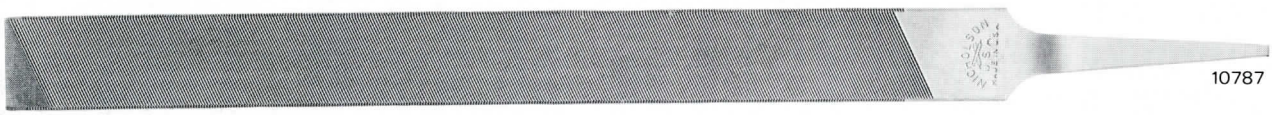
Tungsten point files

02373

Tungsten point files are for dressing distributor points that are tipped with tungsten, iridium and similar metals. Files are $5\frac{1}{4}$ inches overall and double-cut. Chisel tip of file enters slots or gaps easily. Approximate size $\frac{5}{16}$"/8mm x .044"/1.10mm.

|←L→|	Cat./N/S	Wt. per doz.	Shelf
	"/mm	No./No.	lb., oz/g	Pack
	$5\frac{1}{4}$/133	02373	2,8/1134	12 Boxed
	$5\frac{1}{4}$/133	02381	3.8/1588	12 Carded

Veneer knife files

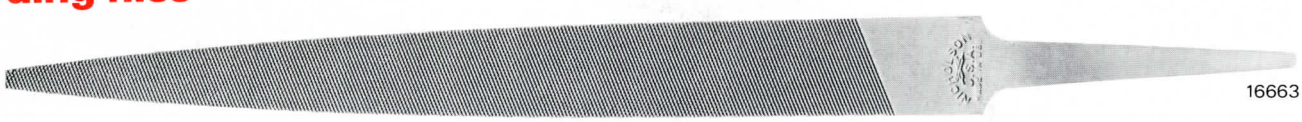


10787

These are actually mill blunt bastard two round edge files with teeth especially designed for sharpening veneer knives.

|←L→|	Cat./N/S	Wt. per doz.	Shelf
	"/mm	No./No.	lb., oz/g	Pack
	8/200	10787	3,0/1361	12
	10/250	10799	5,8/2495	12

Warding files

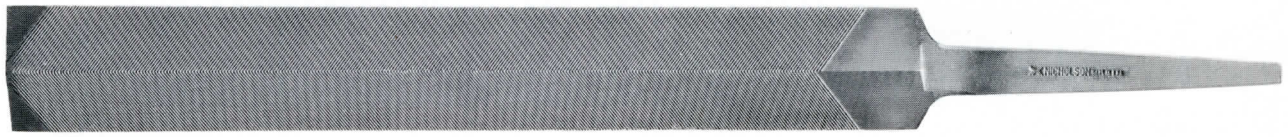


16663

Warding files are rectangular in section and used principally by locksmiths in repairing or filing ward notches in keys. Also suited for use in narrow spaces where other files will not fit. All double-cut on sides, single-cut on edges.

|←L→|	Catalog & Nida/Sida Numbers			Wt. per doz.	Shelf
	"/mm	Bastard	Second Cut	Smooth	lb., oz/g	Pack
	4/114	16507	16540	16573	0,5/142	12
	6/150	16663	16696	16729	0,13/369	12
	8/200	16761	16794	16827	1,10/737	12
	10/250	16859	16891	—	—	12

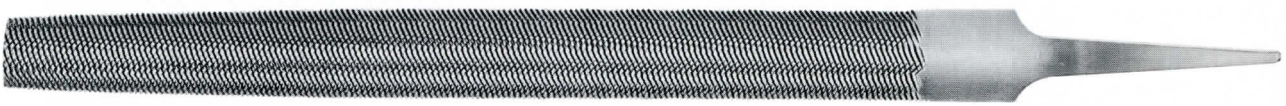
Web saw files



Web saw files are for filing pulpwood or web saws. Because of their shape, they are specially suited for filing saws that have cutting teeth of less than 60° angle or wherever it is desirable to file each bevel of the tooth separately.

|←L→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	17037	3,0/1361	12

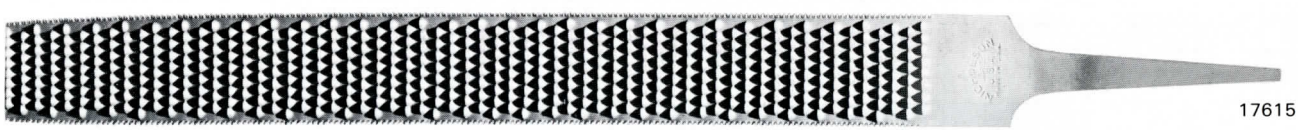
Wood files (Coarse) – half round



Wood files are made in the same sections and size as half round files. However, they have especially coarse teeth, fitting them for use on wood.

|←L→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
10/250	17505	6,1/2750	6

Cabinet rasps

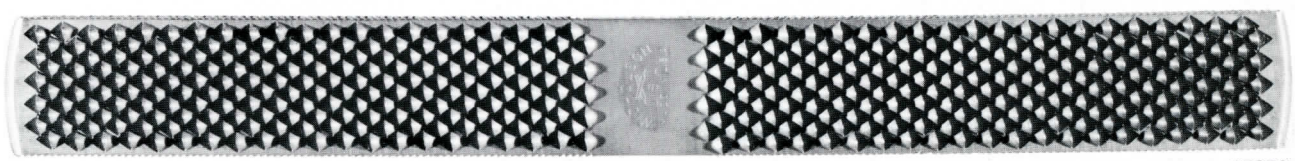


17615

Cabinet rasps are for use by cabinetmakers and woodworkers. The curved side of these rasps is similar to that of half round rasps but has a larger radius. Single-cut on edges.

|←L→| " /mm	Catalog & Nida/Sida Numbers Regular (Second Cut)	Smooth	Wt. per doz. lb., oz/g	Shelf Pack
8/200	17615	—	3,0/1361	12
10/250	17683	17718	5,7/2466	6
12/300	17751	17786	9,5/4224	6

Horse rasps – plain $\frac{1}{2}$ file



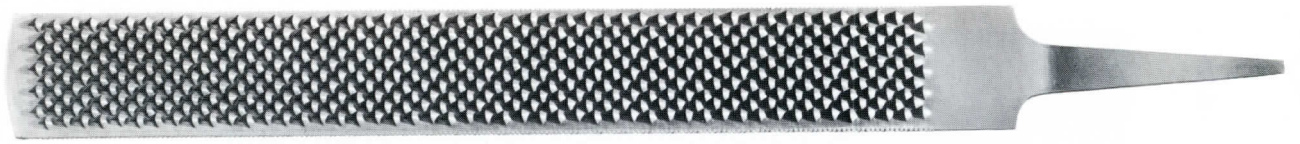
17873

Horse rasps are made in two different types, plain and tanged. Plain horse rasps are double-ended; they have rasp teeth on one side and file teeth on the other. Made in regular, slim and a new pattern called 18" plater's double-ended horse rasp. Many farriers prefer this thin fine-toothed rasp for shoeing racetrack and riding horses.

Regular

|←L→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
12/300	17873	13,15/6322	6
14/350	17903	19,10/8902	6
Slim plater's double-ended			
18/460	18005	28,0/12701	6

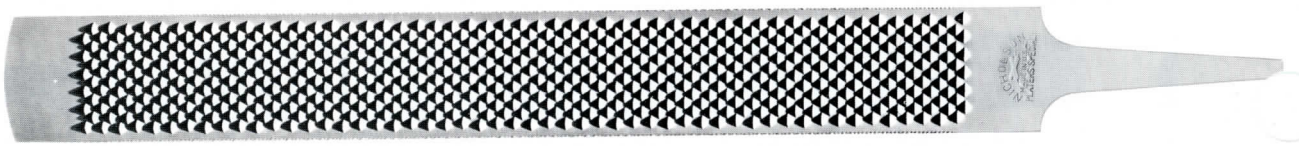
Horse rasps – tanged



Tanged horse rasps are the same as plain horse rasps in tooth construction. They have the rasp teeth on one side and file teeth on the other. Single-cut on edges.

⟷ " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
14/350	18057	26,8/12020	6

Horse rasps – tanged plater's special

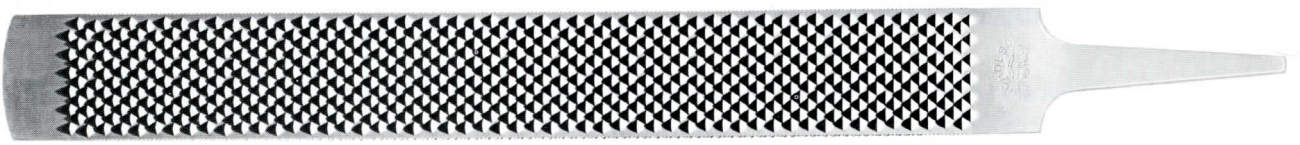


Plater's special horse rasps have rasp teeth on one side with file teeth on the opposite side. Both sides are safe $\frac{7}{8}$"/22mm at point. Rasp cut is six teeth per row. (All other horse rasps have five teeth per row). Primarily for race track and other horses using light shoes. Plater's special horse rasps are sharper than regular horse rasps.

Plater's special double extra thin

⟷ " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
14/350	18157	16,6/7428	6

Magicut® plater's special horse rasp



Tooth design is cut deeper to last longer and cut much faster than conventional horse rasps. Rasp cut is six teeth per row. Single-cut on edges. Opposite side has Nicholson's® unique Magicut file pattern of narrow chip breakers created by steep and angled serrations. This maximum cutting surface design gives rapid removal and smoother finish.

⟷ " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
14/350	18130	15,12/7144	6

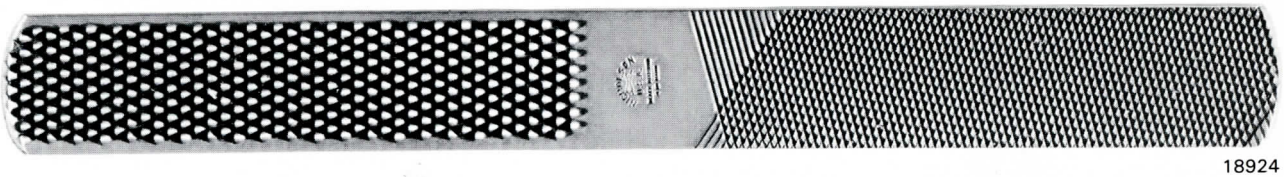
American Pattern Rasps

Pattern maker's cabinet rasps

Cut edges

Code No.	Size and Kind	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
49-10"	Pattern maker's cabinet rasps 2nd Cut, Narrow pattern	18846	3,10/1644	6
50-10"	Pattern maker's cabinet rasps Smooth, Narrow pattern	18861	3,06/1531	6

4-in-Hand® (formerly shoe rasp)

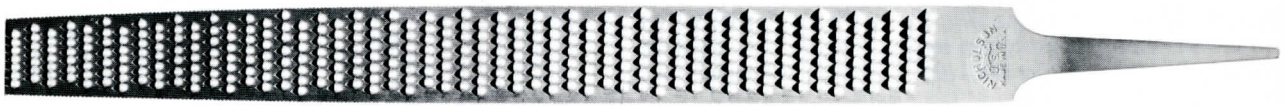


18924

This versatile tool is really four files in one – with a file section and a rasp section on the flat side and a file section and a rasp section on the half round side. Every homeowner, garage man, boat builder and mechanic needs one.

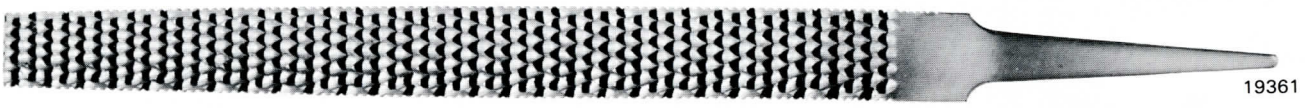
|←L→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
	8/200	18924	4,02/1871	6
	10/250	18962	7,09/3430	6

Wood rasps – flat bastard



|←L→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
	10/250	19136	7,08/3402	6

Wood rasps – half round bastard



19361

|←L→| " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
	6/150	19361	1,08/680	12
	8/200	19394	3,07/1559	12
	10/250	19427	6,08/2948	6
	12/300	19460	10.08/4763	6
	14/350	19493	16,15/7683	6

Wood rasps round bastard

Round wood rasps are used for the same purpose as regular wood rasps in places for which their shapes make them particularly effective. Made from steel of the same size as round files.

|←L→| " /mm	Dia. " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
	10/250	$\frac{3}{8}$/10mm	19875	3,04/1474	12

Nicholson® X.F.® Files Swiss Pattern

Nicholson X.F. Swiss pattern files are made to more exacting measurements than American pattern files. X.F. Swiss pattern files are made in much finer cuts, which vary from No. 00, which is the coarsest, to No. 6, the finest.
X.F. Swiss pattern files are used by tool and die makers, delicate instrument parts finishers, jewelers, model makers, and home craftsmen. In short, everyone who does superfine precision filing will have many uses for X.F. Swiss pattern files.

Barrette files

Barrette files are flat on one side. The backs are beveled on the edges as indicated by the cross section. The included angle is 33 degrees. The wide flat sides are double-cut. Back and beveled edges are "safe" or uncut.

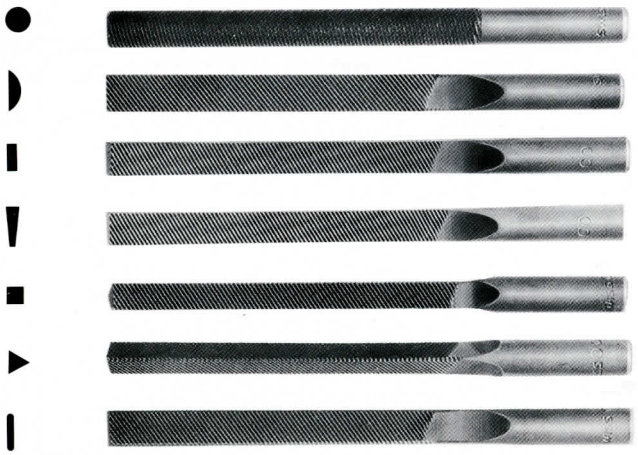
←→ "/mm	Cat. No./N/S No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
3/76	35001	00	0,03/85	12
3/76	35006	0	0,03/85	12
4/101	35025	00	0,09/255	12
4/101	35031	0	0,09/255	12
4/101	35037	1	0,09/255	12
4/101	35043	2	0,09/255	12
6/150	35055	00	1,05/595	12
6/150	35061	0	1,05/595	12
6/150	35073	2	1,05/595	12
8/200	35091	0	2,14/1304	6
8/200	35099	2	2,14/1304	6

Barrette files – hot die

Same as regular Barrette files except with thinner point. 3-inch and 4-inch have an approximate point thickness of .040"/1.10mm.

←→ "/mm	Cat. No./N/S No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
3/76	35108	00	0,03/85	12
3/76	35111	0	0,03/85	12
4/101	35114	00	0,09/255	12
4/101	35117	0	0,09/255	12

$3\frac{1}{4}$"/83mm Bench filing machine files



Bench filing machine files are designed for use in machines for filing dies and patterns. Direction of cutting stroke is towards the shank. They are $3\frac{1}{4}$"/83mm inches overall and have $\frac{1}{4}$"/6mm round shanks. Made in seven different shapes.

Description	Cat. No./N/S No.	Size "/mm x "/mm	Cut	Wt. per doz. lb., oz/g	Shelf Pack
Round	35283	$\frac{1}{4}$"/6mm	00	0,10/284	12
Half Round	35289	$\frac{1}{4}$"/6mm x $\frac{9}{64}$"/13.57	00	0,06/170	12
Pillar	35295	$\frac{7}{32}$"/15.55 x $\frac{1}{8}$"/3mm	00	0,07/198	12
Knife	35307	$\frac{1}{4}$"/6mm x $\frac{1}{8}$"/3mm	00	0,06/170	12
Square	35313	$\frac{3}{16}$"/4.76mm	00	0,08/227	12
Three Square	35319	$\frac{7}{32}$"/5.55mm	00	0,07/198	12
Equaling	35331	$\frac{7}{32}$"/15.55mm x $\frac{1}{8}$"/3mm	00	0,07/198	12

Corrugating files, hand

Hand corrugating files are made for corrugating the edges of barber's shears and other edged tools. Made of rectangular and double-cut. They are designed to corrugate the blade when stroked straight across or, in other words, at right angles to the blade.

⟷ ″/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	36877	2	2,05/1049	12

Corrugating files, pillar R.H.

Pillar right hand corrugating files are made for corrugating the edges of barber's shears and other edged tools. Used by placing the file on the shear blade as close as possible to the pivot point and stroked with a motion forward and to the right, allowing the file to "Track" and form corrugations.

⟷ ″/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	40436	2	1,10/737	12

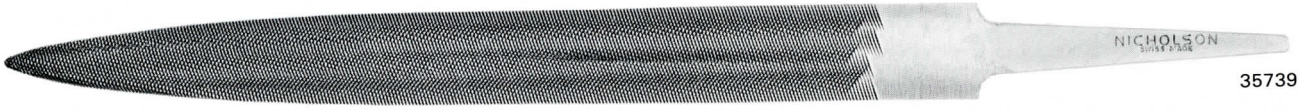
Crochet files

35632

Crochet files are flat with two, well-rounded edges. They taper in both width and thickness. Double-cut on flat sides and both edges.

⟷ ″/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	35612	2	0,07/198	12
6/150	35632	0	1,01/482	12
8/200	35660	0	2,07/1106	6
8/200	35668	2	2,07/1814	6

Crossing files

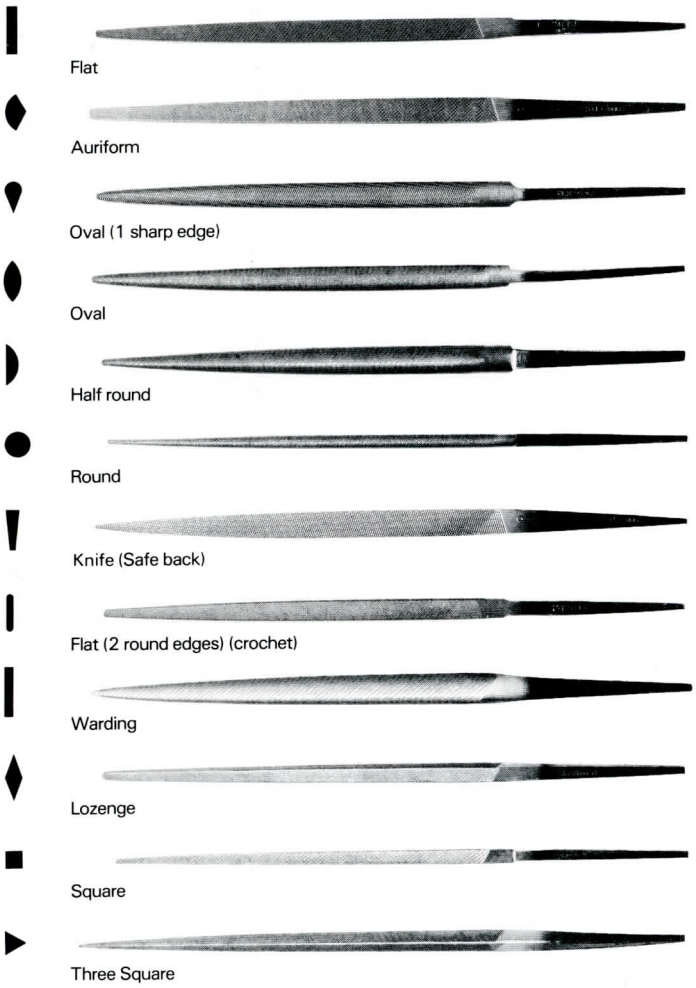


35739

Crossing files are made of double circular section, one side having the same radius as the half file, the other side having a flatter curve or larger radius. Crossing files taper to a point in both width and thickness. Double-cut on both sides.

⟷ ″/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	35719	2	0,10/284	12
6/150	35739	0	1,04/567	12
6/150	35748	2	1,04/567	12
8/200	35778	0	4,00/1814	6

3½"/89mm Die sinker's files



3½"/89mm long. Designed for use by die sinkers in dressing and finishing dies of all kinds. Made in twelve shapes. Assorted sets of files are now supplied in plastic pouches.

Shape	Size "/mm x "/mm	Cat. /N/S No. /No.	Cut	Wt. per doz. oz/g	Shelf Pack
	Assorted set	35807	0	4/113	12
		35812	2	4/113	12
Flat	7/32/5.55 x 7/64/2.77	35817	0	4/113	12
		35823	2	4/113	12
Auriform	17/64/6.74 x 7/64/2.77	35829	0	4/113	12
		35835	2	4/113	12
Oval (1 sharp edge)	17/64/6.74 x 7/64/2.77	35841	0	4/113	12
		35847	2	4/113	12
Oval	17/64/6.74 x 7/64/2.77	35853	0	4/113	12
		35859	2	4/113	12
Half round	1/4/6.35 x 3/32/2.38	35865	0	4/113	12
		35871	2	4/113	12
Round	1/8/3.17	35877	0	3/85	12
		35883	2	3/85	12
Knife (Safe back)	1/4/6.35 x 5/64/1.98 x 1/64/0.39	35889	0	3/85	12
		35895	2	3/85	12
Flat (2 round edges) (crochet)	9/32/7.14 x 7/64/2.77	35901	0	5/141	12
		35907	2	5/141	12
Warding	13/64/5.15 x 3/32/2.38	35913	0	4/113	12
		35919	2	4/113	12
Lozenge	13/64/5.15 x 5/32/3.96	35925	0	4/113	12
		35931	2	4/113	12
Square	1/8/3.17	35937	0	3/85	12
		35943	2	3/85	12
Three Square	11/64/4.44	35949	0	3/85	12
		35955	2	3/85	12

6½"/163mm Die sinker's rifflers

Die sinker's rifflers are made in approximately 6½"/165mm lengths and in cuts 0, 2, and 4. Made in shapes as illustrated. Each riffler identified by number. Rifflers may be purchased in any quantity of each shape or in an assortment of one each of these 12 shapes.

Style No.	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g
Assorted	35961	0	0,06/170
Assorted	35966	2	0,06/170
Assorted	35971	4	0,06/170
1	35976	0	0,05/142
1	35982	2	0,05/142
1	35988	4	0,05/142
4	35994	0	0,05/142
4	36000	2	0,05/142
4	36006	4	0,05/142
5	36012	0	0,05/142
5	36018	2	0,05/142
5	36024	4	0,05/142
6	36030	0	0,05/142
6	36036	2	0,05/142
6	36042	4	0,05/142
7	36048	0	0,05/142
7	36054	2	0,05/142
7	36060	4	0,05/142
8	36066	0	0,06/170
8	36072	2	0,06/170
8	36078	4	0,06/170
9	36084	0	0,06/170
9	36090	2	0,06/170
9	36096	4	0,06/170
11	36102	0	0,06/170
11	36108	2	0,06/170
11	36114	4	0,06/170
12	36120	0	0,06/170
12	36126	2	0,06/170
12	36132	4	0,06/170
15	36138	0	0,06/170
15	36144	2	0,06/170
15	36150	4	0,06/170
16	36156	0	0,06/170
16	36162	2	0,06/170
16	36168	4	0,06/170
18	36174	0	0,06/170
18	36180	2	0,06/170
18	36186	4	0,06/170

Equaling files

36353

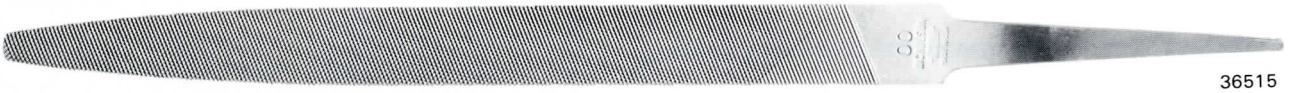
Equaling files are parallel in both width and thickness for their entire length. Double-cut on the two sides and single-cut on both edges.

|←→| " /mm	Cat. /N/S No. /No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	36219	0	0,08/227	12
4/101	36277	2	0,08/227	12
4/101	36233	4	0,08/227	12
6/150	36239	00	1,05/595	12
6/150	36245	0	1,05/595	12
6/150	36253	2	1,05/595	12
8/200	36273	0	3,05/1503	6
8/200	36281	2	3,05/1503	6

Equaling files are also stocked in the following B & S gauges and in cut nos.

|←→| " /mm	B & S Gauge	Cat. /N/S No. /No.	Cut No.
4/101	16 (.051")	36301	2
4/101	18 (.040")	36321	2
6/150	12 (.081")	36353	0
6/150	12 (.081")	36359	2

Half round files



36515

Half round files taper in thickness and width to a point. Double-cut on both flat and half round sides.

|←→| " /mm	Cat. /N/S No. /No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	36450	00	0,08/227	12
4/101	36456	0	0,08/227	12
4/101	36464	2	0,08/227	12
4/101	36470	3	0,08/227	12
4/101	36476	4	0,08/227	12
5/127	36497	2	0,10/284	12
6/150	36515	00	1,03/539	12
6/150	36521	0	1,03/539	12
6/150	36527	1	1,03/539	12
6/150	36533	2	1,03/539	12
6/150	36539	3	1,03/539	12
6/150	36545	4	1,03/539	12
8/200	36557	00	2,10/1191	6
8/200	36563	0	2,10/1191	6
8/200	36569	1	2,10/1191	6
8/200	36575	2	2,10/1191	6
8/200	36581	3	2,10/1191	6
8/200	36587	4	2,10/1191	6
10/250	36593	00	5,10/2552	6
10/250	36599	0	5,10/2552	6
10/250	36607	2	5,10/2552	6

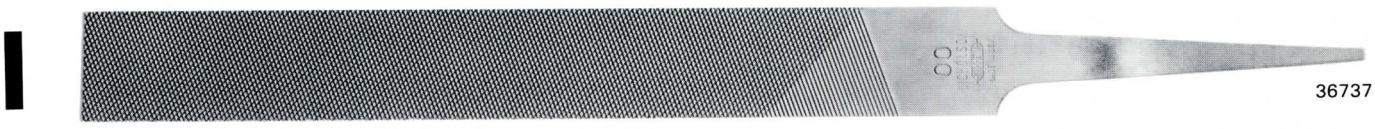
Half-round clicking die files

36636

Clicking die files are the same length, kind and cut as regular half-rounds but best suited for work on rule or clicking dies.

⟷ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	36636	0	1,03/539	12
6/150	36648	2	1,03/539	12
6/150	36654	3	1,03/539	12
6/150	36660	4	1,03/539	12

Hand files

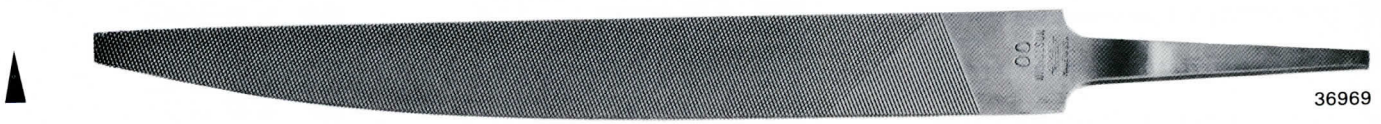


36737

Hand files are parallel in width but taper in thickness. The sides are double-cut. Hand files in cut Nos. 00, 0, 1 and 2 are single-cut on one edge. The other edge is safe. Hand files in cut No. 4 have two safe edges.

⟷ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	36723	2	0,14/397	12
6/150	36737	00	2,05/1049	12
6/150	36743	0	2,05/1049	12
6/150	36749	1	2,05/1049	12
6/150	36755	2	2,05/1049	12
6/150	36767	4	2,05/1049	12
8/200	36779	00	4,09/2070	6
8/200	36785	0	4,09/2070	6
8/200	36791	1	4,09/2070	6
8/200	36797	2	4,09/2070	6
8/200	36805	4	4,09/2070	6
10/250	36823	0	8,00/3629	6

Knife files



36969

Knife files are made from steel that is knife shaped, the included angle of the sharp edge being approximately 10°. These files taper in width and thickness. Double-cut on both sides. 6"/150mm length is single-cut on back; 4"/102mm and 8"/200mm have safe backs.

⟷ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	36933	00	0,07/198	12
4/101	36939	0	0,07/198	12
4/101	36945	1	0,07/198	12
4/101	36951	2	0,07/198	12
4/101	36957	4	0,07/198	12
6/150	36969	00	1,02/510	12
6/150	36975	0	1,02/510	12
6/150	36981	1	1,02/510	12
6/150	36987	2	1,02/510	12
8/200	37001	00	2,03/992	12
8/200	37007	0	2,03/992	12
8/200	37013	1	2,03/992	12
8/200	37019	2	2,03/992	12

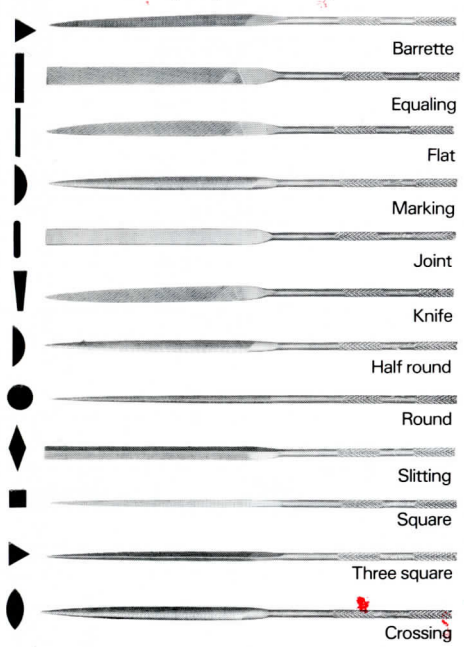
Joint file – square edge thin

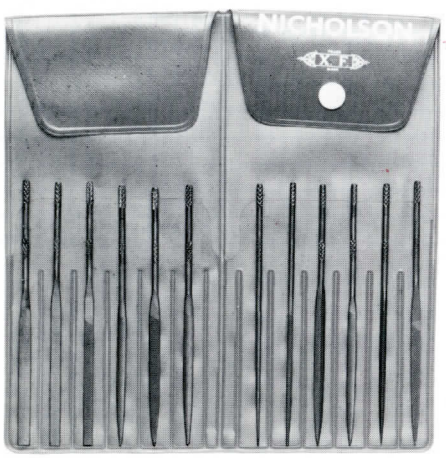
Joint files are parallel in width and thickness and are made with square edges. Double-cut on edges only. Sides are safe.

⟷ ″/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	36909	1	0,05/142	12

Needle files

Round handle. Used principally by jewellers, die makers, watchmakers and fine toolmakers. They are made in twelve different shapes as illustrated. In 4″/101mm lengths, oval is furnished instead of crossing.
These files have knurled handles and when purchased in assortments are supplied in plastic pouches which serve as a protective container. All styles packed 12 per box.





Cat./N/S No./No.	⟷ ″/mm	Shape	Cut
37029	4/101	Assortment	0
37035	4/101	Assortment	2
37277	4/101	Barrette	0
37284	4/101	Barrette	2
37249	4/101	Equaling	0
37256	4/101	Equaling	2
37109	4/101	Flat	0
37116	4/101	Flat	2
37081	4/101	Half round	0
37088	4/101	Half round	2
37305	4/101	Joint (2 round edges)	0
37312	4/101	Joint (2 round edges)	2
37165	4/101	Knife (safe back)	0
37171	4/101	Knife (safe back)	2
37361	4/101	Marking (safe on flat side)	0
37368	4/101	Marking (safe on flat side)	2
37137	4/101	Oval	0
37144	4/101	Oval	2
37053	4/101	Round	0
37060	4/101	Round	2
37333	4/101	Slitting	0
37340	4/101	Slitting	2
37193	4/101	Square	0
37200	4/101	Square	2
37221	4/101	Three square	0
37228	4/101	Three square	2
37392	5½/140	Assortment	0
37398	5½/140	Assortment	2
37404	5½/140	Assortment	4
37640	5½/140	Barrette	0
37647	5½/140	Barrette	2
37654	5½/140	Barrette	4
37500	5½/140	Crossing	0
37507	5½/140	Crossing	2
37514	5½/140	Crossing	4
37612	5½/140	Equaling	0
37619	5½/140	Equaling	2
37626	5½/140	Equaling	4
37472	5½/140	Flat	0
37479	5½/140	Flat	2
37486	5½/140	Flat	4
37444	5½/140	Half round	0
37451	5½/140	Half round	2
37458	5½/140	Half round	4
37668	5½/140	Joint (2 round edges)	0
37675	5½/140	Joint (2 round edges)	2
37682	5½/140	Joint (2 round edges)	4
37528	5½/140	Knife (safe back)	0
37535	5½/140	Knife (safe back)	2
37542	5½/140	Knife (safe back)	4
37724	5½/140	Marking (safe on flat side)	0
37731	5½/140	Marking (safe on flat side)	2
37738	5½/140	Marking (safe on flat side)	4
37416	5½/140	Round	0
37423	5½/140	Round	2
37430	5½/140	Round	4
37696	5½/140	Slitting	0
37703	5½/140	Slitting	2
37710	5½/140	Slitting	4

Cat./N/S No./No.	⟷ ″/mm	Shape	Cut
37556	5½/140	Square	0
37563	5½/140	Square	2
37570	5½/140	Square	4
37584	5½/140	Three square	0
37591	5½/140	Three square	2
37598	5½/140	Three square	4
37755	6¼/159	Assorted	0
37761	6¼/159	Assorted	2
37767	6¼/159	Assorted	4
37773	6¼/159	Assorted	6
38003	6¼/159	Barrette	0
38010	6¼/159	Barrette	2
38017	6¼/159	Barrette	4
38024	6¼/159	Barrette	6
37863	6¼/159	Crossing	0
37870	6¼/159	Crossing	2
37877	6¼/159	Crossing	4
37884	6¼/159	Crossing	6
37975	6¼/159	Equaling	0
37982	6¼/159	Equaling	2
37989	6¼/159	Equaling	4
37996	6¼/159	Equaling	6
37835	6¼/159	Flat	0
37842	6¼/159	Flat	2
37849	6¼/159	Flat	4
37856	6¼/159	Flat	6
37807	6¼/159	Half round	0
37814	6¼/159	Half round	2
37821	6¼/159	Half round	4
37828	6¼/159	Half round	6
38031	6¼/159	Joint (2 round edges)	0
38038	6¼/159	Joint (2 round edges)	2
38045	6¼/159	Joint (2 round edges)	4
38052	6¼/159	Joint (2 round edges)	6
37891	6¼/159	Knife (safe back)	0
37898	6¼/159	Knife (safe back)	2
37905	6¼/159	Knife (safe back)	4
38080	6¼/159	Slitting	4
38087	6¼/159	Marking (safe on flat side)	0
38094	6¼/159	Marking (safe on flat side)	2
38101	6¼/159	Marking (safe on flat side)	4
38108	6¼/159	Marking (safe on flat side)	6
37779	6¼/159	Round	0
37786	6¼/159	Round	2
37793	6¼/159	Round	4
37800	6¼/159	Round	6
38059	6¼/159	Slitting	0
38066	6¼/159	Slitting	2
38073	6¼/159	Slitting	4
38080	6¼/159	Slitting	6
37919	6¼/159	Square	0
37926	6¼/159	Square	2
37933	6¼/159	Square	4
37940	6¼/159	Square	6
37947	6¼/159	Three square	0
37954	6¼/159	Three square	2
37961	6¼/159	Three square	4
37968	6¼/159	Three square	6

Needle files – round handle
Hot die – barrette shape only

38115

Same as regular round handle needle barrette except with thinner points. 5½" /140mm has .039" /1.0mm point thickness, 6¼" /159mm has .044" /1.10mm thickness.

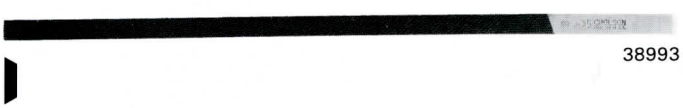
|←L→| " /mm	Cat. /N/S No. /No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
5½/	37752	0	0,04/113	12
6¼/	38115	0	0,06/170	12

8"/203 parallel machine files

8" /203mm parallel machine files are made for filing machines of the Oliver, Harvey, Butterfly, Cochrane-Bly types. There are eight different file shapes as illustrated. Cut No. 00. Direction of cutting stroke is towards the shank.

38917

" /mm x " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
Round			
3/16/4.76	38917	0,70/318	12
1/4/6.35	38929	1,20/544	12
3/8/9.52	38953	2,70/122	12



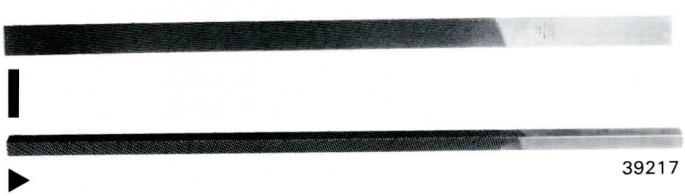
38993

Half round			
1/4/6.35 x 1/8/3.17	38993	0,70/318	12
3/8/9.52 x 3/16/4.76	39005	1,45/658	12

Knife (safe back)			
15/32/11.90	39093	0,85/386	12

39117

Square			
1/4/6.35	39117	1,65/748	12
3/8/9.52	39129	3,20/1452	12



39217

Equaling (or warding)			
3/8/9.52 x 1/16/1.58	39205	0,65/295	12
Three Square			
3/16/4.76	39217	0,60/272	12
1/4/6.35	39229	0,95/431	12
3/8/9.52	39241	1,85/839	12

Parallel machine files – special (tension type)

39337

Special parallel machine files (tension type) are made for use in Thiel, Simplex, Excel and index filing machines. Made in cut No. 1 (Bastard).

⟷ "/mm	Cat./N/S No./No.	Cut No.	Style No.
Flat			
6/150	39337	1	7
Half Round			
4/101	39614	1	82
Crochet			
4/101	39741	1	145
4/101	39753	1	146

Pillar files

39893

Pillar files are similar in shape to hand files but only two-thirds as wide. Double-cut on two sides only. Edges are safe.

⟷ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	39855	00	0,10/284	12
4/101	39861	0	0,10/284	12
4/101	39873	2	0,10/284	12
4/101	39881	4	0,10/284	12
6/150	39893	00	1,10/737	12
6/150	39899	0	1,10/737	12
6/150	39905	1	1,10/737	12
6/150	39911	2	1,10/737	12
6/150	39923	4	1,10/737	12
8/200	39929	00	3,08/1588	6
8/200	39935	0	3,08/1588	6
8/200	39941	1	3,08/1588	6
8/200	39947	2	3,08/1588	6
8/200	39959	4	3,08/1588	6
10/250	39965	00	6,03/2807	6
10/250	39971	0	6,03/2807	6
10/250	39980	2	6,03/2807	6
12/300	39992	00	9,12/2807	6

Pillar narrow files

40070

Pillar narrow files are similar to Pillar files but are narrower for their length. Double-cut on two sides only. Edges are safe.

⟷ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	40037	0	0,08/227	12
4/101	40049	2	0,08/227	12
6/150	40070	00	1,04/567	12
6/150	40076	0	1,04/567	12
6/150	40082	1	1,04/567	12
6/150	40088	2	1,04/567	12
6/150	40097	4	1,04/567	12
8/200	40109	00	2,10/1191	6
8/200	40115	0	2,10/1191	6
8/200	40121	1	2,10/1191	6
8/200	40127	2	2,10/1191	6
10/250	40141	00	5,03/2353	6
10/250	40147	0	5,03/2353	6

Pillar extra narrow files

40242

Pillar extra narrow files are similar to Pillar and Pillar narrow files but are narrower for their length. Cut on the two sides only. Edges are safe.

←→ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	40204	00	0,05/142	12
4/101	40210	0	0,05/142	12
4/101	40222	2	0,05/142	12
6/150	40242	00	0,13/369	12
6/150	40248	0	0,13/369	12
6/150	40254	1	0,13/369	12
6/150	40260	2	0,13/369	12
6/150	40269	4	0,13/369	12
8/200	40281	00	1,15/879	12
8/200	40287	0	1,15/879	12
10/250	40314	00	3,11/1673	12

Pillar and pillar narrow testing files

40412

These testing files are like our regular product in shape only. They are not made for removal of stock, but are for testing only. They have specially shaped teeth and have been specially treated.

←→ "/mm	Description	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
6/150	Pillar Testing	40406	1	1,10/737	12
8/200	Pillar Narrow Testing	40412	0	2,10/1191	6
		40418	1	2,10/1191	6

Hardness testing with pillar testing files

Before leaving our plant, each file is tested on both sides on a piece of high carbon tool steel that has been hardened and tempered to 375°F(190°C). Each file must bite this piece of steel in good shape. These 375°F(190°C) provers register C63-65 Rockwell and about No. 88 Scleroscope. When files are made to a standard and when it is known just the hardness that a new file will cut, then the file test becomes a real standard test. Since Nicholson testing files are made to such a standard and must be uniform, the file test is the same from day to day. Of course, the file in time will get dull, but good judgment on the part of the workman overcomes this difficulty.

These files are not made for filing off stock; they are just for testing. As soon as the file bites, it should be removed from the work in order to preserve and prolong its biting quality. If it does not bite, the work is too hard for the file. Pieces of steel or samples of the product known to have the proper hardness and temper are often used as gauges for comparison. Our hardness testing files are used to a large extent by manufacturers of taps, drills, bits, reamers, ball bearings, gears, etc.

Pippin files

40494

Pippin files, sometimes called "Apple Seed" files, have rounded backs which taper to a sharp edge. They also taper to a point in both width and thickness.

←→ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	40478	0	0,07/198	12
4/101	40486	2	0,07/198	12
6/150	40494	00	1,01/482	12
6/150	40500	0	1,01/482	12
6/150	40506	2	1,01/482	12
8/200	40512	00	1,13/822	12
8/200	40518	0	1,13/822	12
8/200	40524	2	1,13/822	12

Round files

40645

Round files taper throughout their length to a fine point. Double-cut.

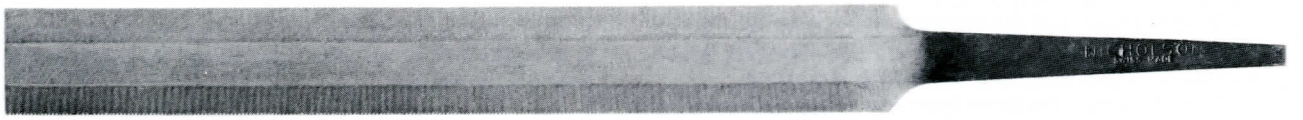
⟷ "/mm	Dia. "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	$\frac{1}{8}$"/3mm	40574	00	0,04/113	12
4/101	$\frac{1}{8}$"/3mm	40580	0	0,04/113	12
4/101	$\frac{1}{8}$"/3mm	40592	2	0,04/113	12
4/101	$\frac{1}{8}$"/3mm	40604	4	0,04/113	12
6/150	$\frac{3}{16}$"/4.76mm	40645	00	0,11/312	12
6/150	$\frac{3}{16}$"/4.76mm	40651	0	0,11/312	12
6/150	$\frac{3}{16}$"/4.76mm	40657	1	0,11/312	12
6/150	$\frac{3}{16}$"/4.76mm	40663	2	0,11/312	12
6/150	$\frac{3}{16}$"/4.76mm	40675	4	0,11/312	12
8/200	$\frac{1}{4}$"/6mm	40687	00	1,05/595	12
8/200	$\frac{1}{4}$"/6mm	40693	0	1,05/595	12
8/200	$\frac{1}{4}$"/6mm	40699	1	1,05/595	12
8/200	$\frac{1}{4}$"/6mm	40705	2	1,05/595	12
8/200	$\frac{1}{4}$"/6mm	40717	4	1,05/595	12
10/250	$\frac{21}{64}$"/8.3mm	40729	0	2,11/1219	12
10/250	$\frac{21}{64}$"/8.3mm	40741	2	2,11/1219	12

Round straight files

Round straight files are made from the same sizes of steel as round files but are parallel throughout their length. Double-cut.

⟷ "/mm	Dia. "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	$\frac{1}{8}$"/3mm	40765	0	0,04/113	12
6/150	$\frac{3}{16}$"/4.76mm	40789	0	0,14/397	12
8/200	$\frac{1}{4}$"/6mm	40813	0	1,12/794	12

Screw head files



Screw head files are made for enlarging and cleaning out the slots in the heads of screws. They are made in one style, in one size only and in one cut, and are used principally by watchmakers and jewelers.

⟷ "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
3/50	40972	0,03/85	12

Slitting files

41144

Slitting files are made of double angular section, the included angle between the sides being approximately 18°. Double-cut on the four sides and single-cut on the two sharp edges.

⟷ "/mm	Cat./N/S No./No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	41138	2	0,06/170	12
6/150	41144	0	0,14/397	12
6/150	41150	2	0,14/397	12

7½"/190mm Silversmith's rifflers

Silversmith's rifflers are made in approximately 7½"/190mm lengths only, in twelve shapes as illustrated. May be purchased in assortments or in any quantity of each shape.

←L→ "/mm	Cat. /N/S No. /No.	Shape	Cut No.	Shelf Pack
7½/190	40978	Assorted	0	12
7½/190	40983	Assorted	2	12
7½/190	40988	1	0	12
7½/190	40994	1	2	12
7½/190	41000	2	0	12
7½/190	41006	2	2	12
7½/190	41012	3	0	12
7½/190	41018	3	2	12
7½/190	41024	4	0	12
7½/190	41030	4	2	12
7½/190	41036	5	0	12
7½/190	41042	5	2	12
7½/190	41048	6	0	12
7½/190	41054	6	2	12
7½/190	41060	7	0	12
7½/190	41066	7	2	12
7½/190	41072	8	0	12
7½/190	41078	8	2	12
7½/190	41084	9	0	12
7½/190	41090	9	2	12
7½/190	41096	10	0	12
7½/190	41102	10	2	12
7½/190	41108	11	0	12
7½/190	41114	11	2	12
7½/190	41120	12	0	12
7½/190	41126	12	2	12

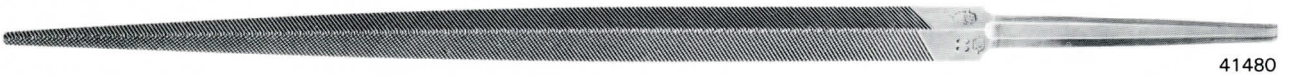
Square files

41210

Square files are square in section and taper on all four sides to a fine point. Double-cut on all four sides.

|←→| " /mm	Cat. /N/S No. /No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	41184	0	0,04/113	12
4/101	41196	2	0,04/113	12
6/150	41210	00	0,10/284	12
6/150	41216	0	0,10/284	12
6/150	41228	2	0,10/284	12
8/200	41243	00	1,08/680	12
8/200	41249	0	1,08/680	12
8/200	41261	2	1,08/680	12
10/250	41270	00	3,00/1361	12

Three square files

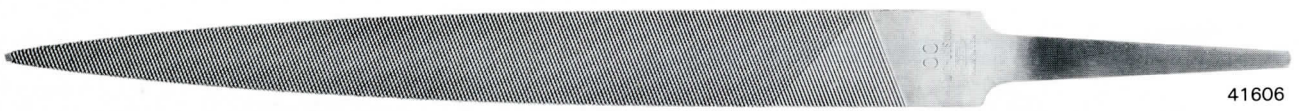


41480

Three square files are triangular in section with angles of 60°. They taper to a point and have sharp corners. Double-cut on the three sides and single-cut on the edges.

|←→| " /mm	Cat. /N/S No. /No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	41448	00	0,06/170	12
4/101	41454	0	0,06/170	12
4/101	41466	2	0,06/170	12
6/150	41480	00	1,10/737	12
6/150	41486	0	1,10/737	12
6/150	41492	1	1,10/737	12
6/150	41498	2	1,10/737	12
6/150	41506	4	1,10/737	12
8/200	41512	00	2,10/1191	12
8/200	41518	0	2,10/1191	12
8/200	41524	1	2,10/1191	12
8/200	41530	2	2,10/1191	12

Warding files



41606

Warding files are rectangular in section with thickness approximately one-eighth their width. They taper slightly in thickness and to a point in width.

|←→| " /mm	Cat. /N/S No. /No.	Cut No.	Wt. per doz. lb., oz/g	Shelf Pack
4/101	41576	00	0,05/142	12
4/101	41582	0	0,05/142	12
4/101	41588	2	0,05/142	12
6/150	41606	00	0,13/369	12
6/150	41612	0	0,13/369	12
6/150	41618	2	0,13/369	12
6/150	41624	4	0,13/369	12
8/200	41636	00	1,10/737	12
8/200	41642	0	1,10/737	12
8/200	41648	2	1,10/737	12

Warding files are also stocked in the following B & S gauges, and in the cut No. shown below.

|←→| " /mm	Cat. /N/S No. /No.	Cut No.	B & S Gauge	Wt. per doz. lb., oz/g	Shelf Pack
6/150	41775	0	16 B & S Gauge (.051)	0,13/369	12

Nicholson® Curved Tooth Files

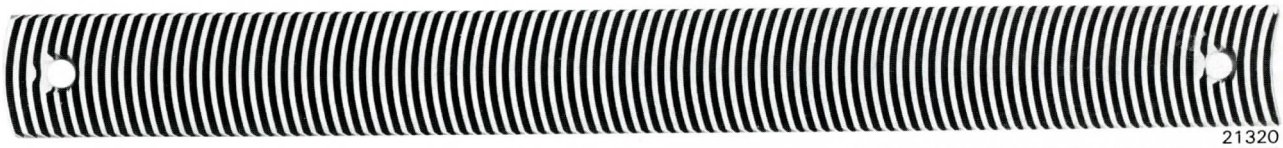
Superior® milled tooth files. Made on newly designed and improved Nicholson machinery, these files are ideally fitted for smooth, rapid work on cast iron, bronze, lead, Babbitt, aluminum, zinc, plastics and any of the steels up to the hardness of commercial annealed tool steel. Tooth profile is scientifically determined for the right pitch and rake to avoid pinning up and to give the smoothest finish.

Flexible files(without tang)

20046

←L→ " /mm	Cat. No. /N/S No.	No. of Teeth per inch/cut	Wt. per doz. lb., oz/g	Shelf Pack
8/200	20046	14/Standard	2,09/1162	12
10/250	20089	12/Standard	3,15/1786	12
12/300	20138	10/Standard	5,08/2495	6
14/350	20189	8/Standard	7,01/3204	6
14/350	20205	12/Fine	7,01/3204	6
14/350	20222	15/Smooth	7,01/3204	6

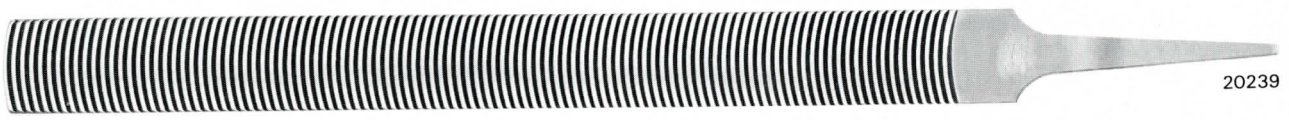
Milled tooth bodifiles



21320

Cut	Cat. No. /N/S No.	No. of Teeth per inch	Wt. per doz. lb., oz/g	Shelf Pack
50-907	21320	7	7,01/3204	6
50-908	20189	8	7,01/3204	6
50-910	21348	10 Radius edges	7,01/3204	6
50-912	21361	12 Radius edges	7,01/3204	6

Flat Files-rigid type(with tang)



20239

←L→ " /mm	Cat. No. /N/S No.	No. of Teeth per inch/cut	Wt. per doz. lb., oz/g	Shelf Pack
8/200	20239	14/Standard	2,12/1247	12
10/250	20291	12/Standard	5,14/2665	6
12/300	20342	10/Standard	9,05/4224	6
14/350	20393	8/Standard	14,14/6747	6

Flat Babbitt files

20479

Exactly like flat files in shape, dimension and weight, but fewer teeth per inch.

←L→ " /mm	Cat. No. /N/S No.	No. of Teeth per inch	Wt. per doz. lb., oz/g	Shelf Pack
12/300	20479	8	9,04/4196	6
14/350	20496	7	14,12/6691	6

Flat utility files

20547

Like flat files in general appearance. Standard cut teeth on one side, smooth cut teeth on the other.

←L→ " /mm	Cat. /N/S No. /No.	No. of Teeth per inch	Wt. per doz. lb., oz/g	Shelf Pack
12/300	20547	10 and 16	10,03/4621	6
14/350	20564	8 and 15	16,13/7626	6

Half round files

20582

Flat on one side, convex on the other. Particularly adapted for bearings and concave surfaces.

←L→ " /mm	Cat. /N/S No. /No.	No. of Teeth per inch/cut	Wt. per doz. lb., oz/g	Shelf Pack
8/200	20582	14/Standard	3,08/1588	12
10/250	20624	12/Standard	6,05/2863	6
12/300	20667	10/Standard	11,05/5131	6
14/350	20703	9/Standard	17,09/7966	6

Super shear®

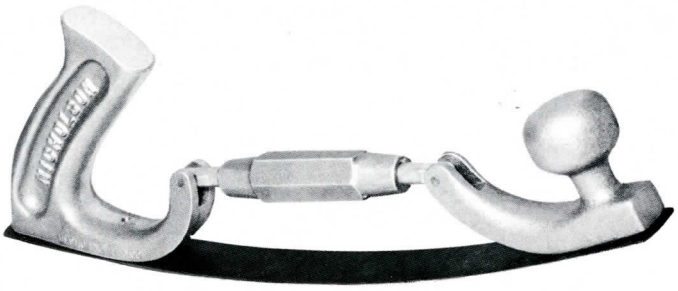
A double purpose milled curved tooth file—new and different and exclusive with Nicholson®. A curved tooth file that smooths as it roughs.

21016

The curved teeth of the Nicholson super shear are cut in an arc that is "off center" in relation to the axis of the file. This permits the teeth to begin with wide gullets and a right angle—for fast cutting. The Nicholson super shear file (patented) is a distinctively new "double purpose" milled tooth file for wide industrial usage on the flat and convex surfaces of aluminum, brass, Babbitt, bronze, copper, magnesium, and iron, annealed steel and soft metal alloys, on plastics, hard rubber and hardwood.

←L→ " /mm	Cat. /N/S No. /No.	No. of Teeth per inch/cut	Wt. per doz. lb., oz/g	Shelf Pack
8/200	21016	14/Standard	2,12/1247	12
10/250	21067	12/Standard	5,14/2665	6
12/300	21118	10/Standard	9,05/4224	6
14/350	21169	14/Standard	17,00/7711	6

Miscellaneous Nicholson® Tools:
Adjustable flexible file holder No. 25



Can be used with either 12" or 14" Files and is easily adjusted for curving the file either outward or inward.

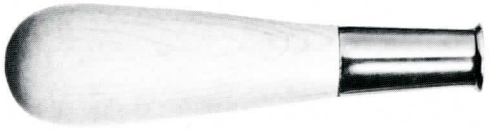
No.	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
25	21272	2,00/907	1

Machinist's scrapers(handled)

Note that the three square shape is supplied in hollow ground with 60° angle. Overall length of these tools including handle is approximately 8". Packed one-half dozen in box.

Cat./N/S No./No.	Length Overall "/mm	Dimensions "/mm x "/mm	Wt. per doz. lb., oz/g	Shelf Pack
21667	8/200	3 1/8/82mm x 3/8/10mm	1,14/851	12

Metal ferruled handles



These handles have very strong metal ferrules. Made from seasoned white birch with nickel plated ferrules. Shellac finish.

No.	Cat./N/S No./No.	Approximate size "/mm x "/mm	Wt. per doz. lb., oz/g	Shelf Pack
0	21476	5 1/4/133 x 1 1/2/38	2,00/907	12
1	21485	4 7/8/124 x 1 5/16/33	1,10/737	12
2	21494	4 1/2/114 x 1 3/16/30	1,04/567	12
3	21503	4 1/8/105 x 1 1/16/27	1,00/454	12
4	21511	3 3/4/95 x 1 5/16/24	0,12/340	12

Sizes of handles recommended for some of the more common files:

Description	"/mm 6/150	"/mm 7/178	"/mm 8/200	"/mm 10/250	"/mm 12/300	"/mm 14/254
Flat, Half Round hand	3	—	2	1	0	0
Square, round	4	—	3	2	1	1
Three square	3	—	2	1	0	—
Pillar	2	—	1	0	0	—
Warding, knife	2	—	2	1	—	—
Mill	3	3	2	1	0	0
Slim, taper	4	2	2	1	—	—
Extra slim taper	4	4	3	—	—	—
Double extra slim taper	4	4	4	—	—	—

Bent rifflers (handled)

Three square bastard

Half round bastard

Hand bastard

Three square rasp

Flat float safe sides

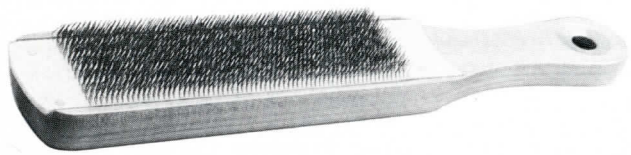
Round rasp

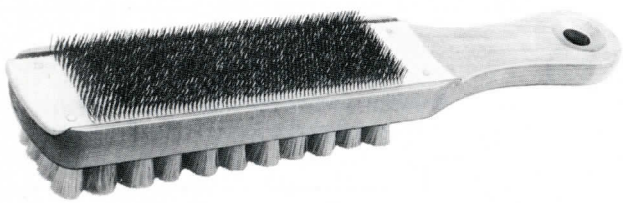
Used principally by woodcarvers, metal and stone workers for shaping and finishing in and about the many irregular places of pattern work. Made in six different shapes and styles of cuts. Overall length of tools, including handle, is approximately 7 3/4 inches. Available in assortments of 6 only.

Assortment of 6

⟷ " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
7¾/197	21450	0,84/382	6

File cleaners





Nicholson® makes file cleaners in two styles—the file card for general cleaning of file teeth and the file brush especially for use on the finer cut files. Overall length of each type cleaner is 10".

File Card

⟷ " /mm	Cat. /N/S No. /No.	Wt. per doz. lb., oz/g	Shelf Pack
10/250	21458	3,11/1673	12

File Brush

10/250	21467	5,00/2268	6

Butcher steel

Deluxe sharpening steel suitable for displaying with the finest cutlery. Walnut-stained hardwood handle, chrome plated solid ring and guard. Threaded tang and serrated teeth. Steel magnetized to collect chips.

Code No.	Cat. /N/S No. /No.	" /mm x " /mm	Wt. per doz. lb., oz/g	Shelf Pack
7A	23333	12/300 x 5/8/16	14,00/6350	6
8A	23392	14/350 x 5/8/16	15,08/7031	6

Household steel

Economy household steel for general kitchen use. A serrated cut, magnetized steel and cadmium plated fuse and guard. Screw eye in end of handle.

Code No.	Cat. /N/S No. /No.	" /mm x " /mm	Wt. per doz. lb., oz/g	Shelf Pack
45	23769	10/250 x 3/8/10	4,05/1956	6

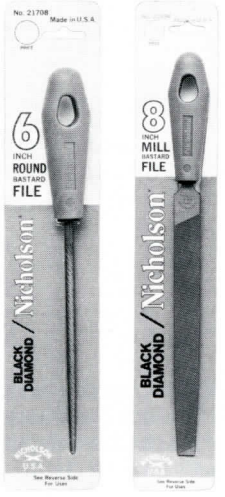
Nicholson® carded files

Carded files without handle

Description ″/mm x ″/mm	Cat. /N/S No. /No.	Pack	Wt. per Shelf Pk. lb., oz/g
6/150 Mill Bastard	21825	6	1,5/595
8/200 Mill Bastard	21832	6	2,1/936
10/250 Mill Bastard	21839	6	3,8/1588
12/300 Mill Bastard	21842	6	5,1/2296
6/150 Round Bastard	21846	6	0,15/425
8/200 Round Bastard	21853	6	1,5/595
10/250 Round Bastard	21854	6	2,1/936
8/200 4-in-Hand	21860	6	2,1/936
6/150 Slim Taper	21866	6	1,5/595
6/150 Flat Bastard	21867	6	1,5/595
6/150 X Slim Taper	21873	6	1,3/539
6/150 XX Slim Taper	21874	6	0,15/425
8/200 Flat Bastard	21862	6	2,7/1106
8/200 Half Round Bastard	21857	6	2,1/936
10/250 Flat Bastard	21868	6	3,9/1616
10/250 Half Round Bastard	21858	6	3,9/1616
8/200 Half Round Wood Rasp	21878	6	2,1/936
8/200 x $\frac{1}{4}$/6 Round Chainsaw File	01974	6	2,3/992
8/200 x $\frac{7}{32}$/5 Round Chainsaw File	01888	6	2,0/907
8/200 x $\frac{3}{16}$/4 Round Chainsaw File	01765	6	1,13/822
6/150 x $\frac{5}{32}$/3 Round Chainsaw File	01630	6	1,3/539
6/150 x $\frac{1}{8}$/3 Round Chainsaw File	01590	6	1,0/454

Modular displays are available for these files. Please see page 87.

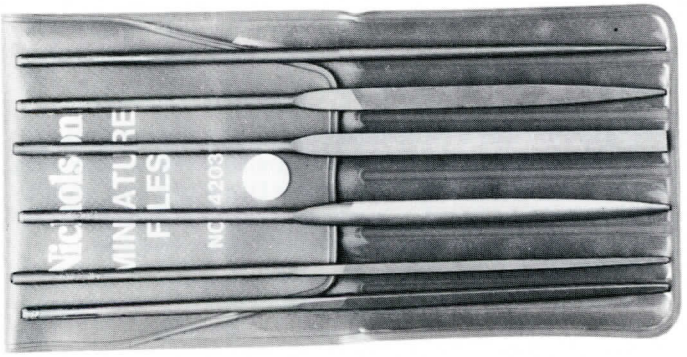
Carded Files with handle



Description ″/mm	Cat. /N/S No. /No.	Pack	Wt. per Shelf Pk. lb., oz/g
6/150 Mill Bastard	21687	6	1,2/510
8/200 Mill Bastard	21694	6	2,0/907
10/250 Mill Bastard	21701	6	3,14/1758
6/150 Round Bastard	21708	6	1,0/454
8/200 Round Bastard	21715	6	1,6/624
10/250 Round Bastard	21720	6	2,13/1276
6/150 Slim Taper	21729	6	1,1/482
6/150 X Slim Taper	21736	6	0,15/425
6/150 XX Slim Taper	21743	6	0,12/340
8/200 Half Round Bastard	21745	6	2,7/1106
10/250 Half Round Bastard	21746	6	3,15/1786
8/200 Flat Bastard	21748	6	2,1/936
8/200 Half Round Wood Rasp	21749	6	2,1/936

Modular displays are available for these files. Please see page 87.

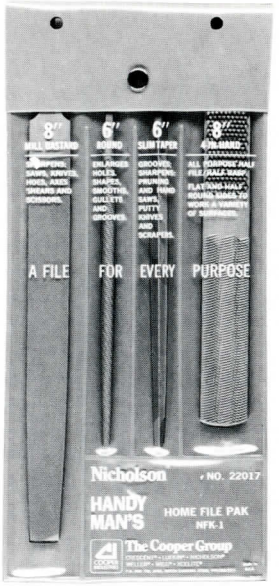
Mini files



A selection of 6 miniature files with a fine cut for intricate work. Available either separately or all 6 in a handy vinyl case vacuum-packed on hang-up card.

Description	Cat. /N/S No. /No.	←→ ″/mm	Wt. per shelf pk. lb., oz/g	Shelf Pack
Equaling	42001	5½/140	1,2/510	12
Half round	42010	5½/140	1,2/510	12
Flat	42005	5½/140	1,2/510	12
Round	42015	5½/140	1,2/510	12
Square	42020	5½/140	1,2/510	12
Three square	42025	5½/140	1,2/510	12
Assorted	42030	5½/140	0,12/340	3

Handy man's home file pack



For home and professional use, this handy file pack contains a file for every home purpose. 8"/200mm Mill Bastard, 8"/200mm four-in-hand, 6"/150mm Slim Taper and 6"/150mm Round Bastard. The convenient plastic pouch lists suggested uses for each file. Pack measures 5"/125mm and 11⅛"/293mm with hang hole.

Contents

Description "/mm	Cat./N/S No./No.	Weight lb., oz/g	Shelf Pack
8/200 Mill Bastard, 6/150 Round Bastard, 8/200 4-in-hand, 6/150 Slim taper, pouch.	22017	4,8/2041	5

3 file pack

For home and professional use, this 3 file pack contains a file for every purpose 6"/150mm Slim Taper, 6"/150mm Round File, 6"/150mm Mill Bastard. The plastic pouch lists suggested uses for each file. Pack measures 3½"/88mm x 9½"/237mm with hang hole.

Contents

Description "/mm	Cat./N/S No./No.	Weight lb., oz/g	Shelf Pack
6/150 Slim Taper, 6/150 Round File, 6/150 Mill Bastard, Pouch.	22015	0,4½/128	5

Home and garden file

Sharpens knives, scissors and garden tools. Sharpens rotary mower blades to knife-like edge and smooths nicks that tear grass. Files come skin-packed for pegboard display. Shipped in its own corregated merchandisers for retail display. Available carded only.

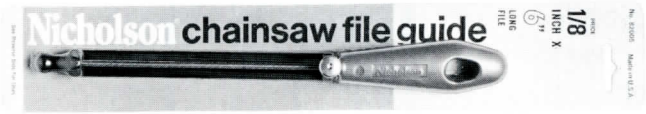
←L→ "/mm	Size "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
10/250	¾/19 x 9/64/3.57	11488	4,8/204	12

Handy file

This gives the user a combination file, single-cut on one side for sharpening edged tools and smoothing metal surfaces, double-cut on other side for rapid removal of metal. One edge is "cut" and the other is "safe" or "uncut." Convenient "hang up" hole. (Skin packed). Length measured exclusive of handle. Available carded only.

←L→ "/mm	Size "/mm	Cat./N/S No./No.	Wt. per doz. lb., oz/g	Shelf Pack
8/200	31/32/24 x 11/64/4.4	06601	5,10/2552	6

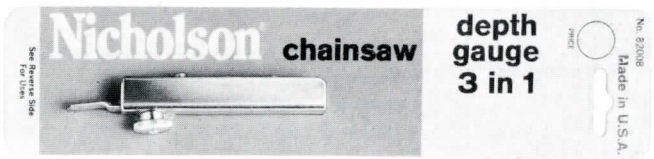
Carded chainsaw file guide with file and handle



First chainsaw file guide that's so simple to use it can turn almost anyone into an expert. Features filing angle indicator and flat guide edge that positions just the right angle and depth of each file stroke. Lightweight yet corrosion proof and extra durable because it's made of nylon which acts as a lubricant to insure a free-sliding stroke. The $\frac{3}{16}$"/4.7mm, $\frac{7}{32}$"/5.5mm, and $\frac{1}{4}$"/6mm files can be used interchangeably on the 8"/200mm guide and the $\frac{1}{8}$"/3mm and $\frac{5}{32}$"/4mm files can be used interchangeably on the 6"/150mm guide. Available in 6"/150mm and 8"/200mm models designed to accommodate the five most popular diameters of round chainsaw files.

Length "/mm x "/mm	Description	Cat./N/S No./No.	Wt. per Shelf Pk. lb., oz/g	Shelf Pack
8/200 x $\frac{1}{4}$/6	Chainsaw File Guide	82001	2,3/992	4
8/200 x $\frac{7}{32}$/5.5	Chainsaw File Guide	82002	2,0/907	4
8/200 x $\frac{3}{16}$/4.7	Chainsaw File Guide	82003	1,13/882	4
6/150 x $\frac{5}{32}$/4	Chainsaw File Guide	82004	1,3/539	4
6/150 x $\frac{1}{8}$/3	Chainsaw File Guide	82005	1,0/454	4

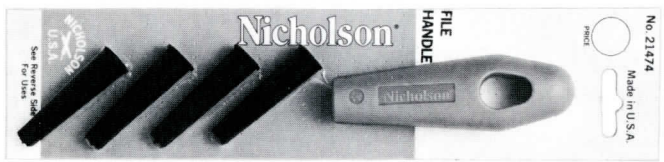
Three-in-one depth gauge



Used for filing and maintaining proper depth gauge clearance.

Item	Cat./N/S No./No.	Wt. per Shelf Pk. lb., oz/g	Shelf Pack
3-in-1 Depth Gauge	82008	2,4/1021	6

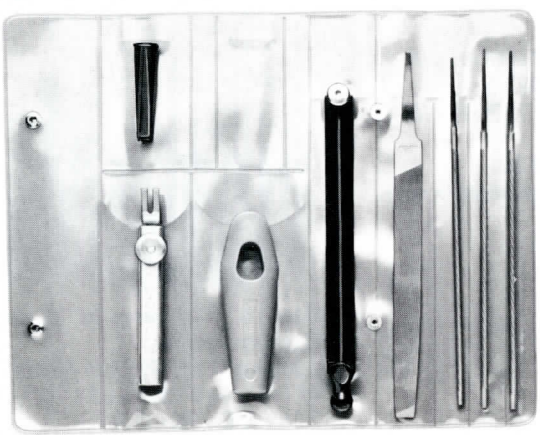
Carded file handle



Description	Cat./N/S No./No.	Wt. per Shelf Pk lb., oz/g	Shelf Pack
Carded file handle and inserts	21474	—	6

Chainsaw sharpening kits

New!

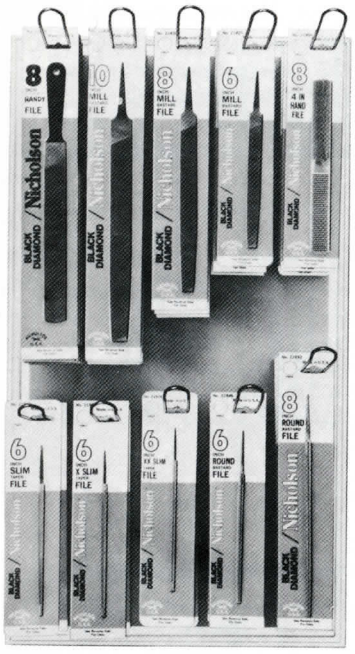


New kit, available in 3 sizes for $\frac{7}{32}$"/5.5mm, $\frac{5}{32}$"/4mm and $\frac{1}{8}$"/3mm cutters.
Kit includes 3 round files for sharpening cutters; mill bastard file for planing depth gauge; the file guide to ensure correct angle and depth of filing; handle and inserts for all files and depth gauge tool. Handy carrying wallet.

Cat./N/S No./No.	Size "/mm	Wt. per Shelf Pk. lb., oz/g	Shelf Pack
21751	$\frac{7}{32}$"/5.5		6
21752	$\frac{5}{32}$"/4		6
21753	$\frac{1}{8}$"/3		6

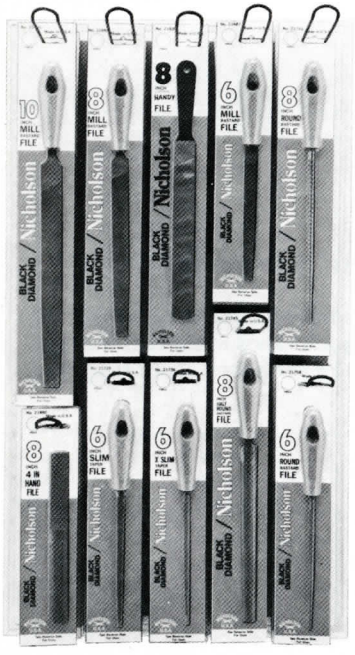
Nicholson® Modules

TW-20 (21848) File Module



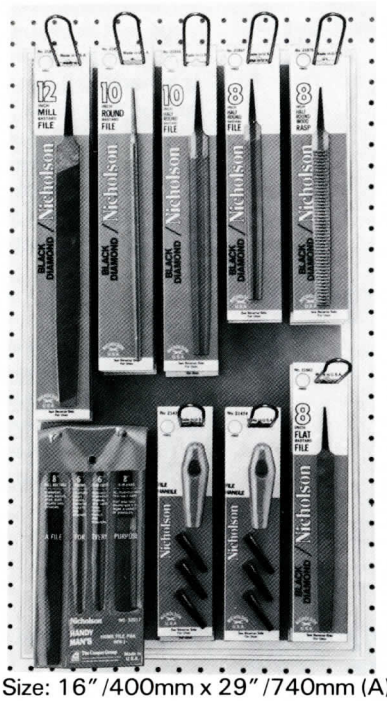
Size: 16" /400mm x 29" /740mm (A)
Shipping weight: 21 lb/9.52 kg
Contains: Six (6) Each 21825, 21832, 21839, 21846, 21853, 21860, 21866, 21873, 21874, 06601
TW-20A (21849) refill assortment only.

TW-21 (21850) File Module



Size: 16" /400mm x 29" /740mm (A)
Shipping weight: 29 lb/13.15 kg
Contains: Six (6) Each 21687, 21694, 21701, 21708, 21715, 21860, 21729, 21736, 21745, 06601
TW-21A (21851) refill assortment only.

TW-22 (21855) File Module



Size: 16" /400mm x 29" /740mm (A)
Shipping weight: 26 lb/11.79 kg
Contains: Three (3) Each 22017
Six (6) Each 21842, 21854, 21857, 21858, 21862, 21878, 21474
TW-22A (21856) refill assortment only.

TW-23 (01655) Chainsaw File Module

Size: 16" /400mm x 16" /400mm (B)
Shipping weight: 9 lb/4.08 kg
Contains: Three (3) Each 01765, 82002, 82003, 82004
Six (6) Each 01888, 01630
TW-23A (01656) refill assortment only.

TW-102 (21844) File Module

Size: 16" /400mm x 29" /740mm (A)
Shipping weight: 15 lb/6.80 kg
Contains: Three (3) Each 11491, 21860, 21694, 21687, 21701, 21729, 21736, 21743, 21715, 21708
TW-102A (21845) refill assortment only.

TW-206 (21865) Nicholson Hobby File Module

Size: 16" /400mm x 29" /740mm (A)
Shipping weight:
Contains: Two (2) Each 42001, 42005, 42010, 42015, 42020, 42025, 21825, 21846, 21866, 22015
Four (4) Each 42030
TW-206A (21871) refill assortment only.

Nicholson® Rotary Files and Burs

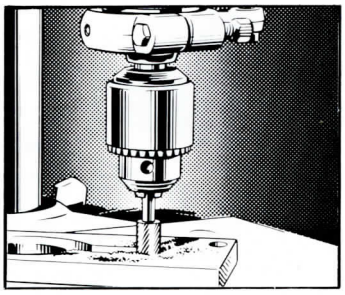
Facts about Rotary Power Filing

If you are considering power filing as a method of abrading or smoothing metal—and it's a mighty fine method for certain jobs—you have a choice of hand cut rotary files or ground from soild burs—the latter type made either from high speed steel or carbide. The purpose of this section is to discuss their uses, explain their anatomy, analyze their advantages and warn you against their limitations; to suggest the best methods of using these power tools; and to recommend appropriate speeds at which they can be operated.

First let's consider the general applications of these power driven hand tools throughout industry.

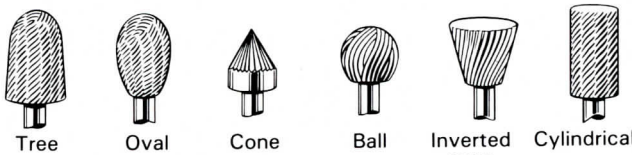
Both types—rotary files and ground burs (high speed and carbide)—are widely used in die sinking, metal pattern making, mold finishing, tool making and finishing small and intricate parts. In such work they are used for breaking and chamfering corners, removing burs and fins; for elongating holes and slots and other hard to get at places. Name almost any metalworking plant and you find a potential field for power filing.

The aircraft industry uses burs on aluminum, titanium and magnesium, frequently finding the "Tree Shapes" with tapered points or rounded noses suitable for its particular applications, and the oval shapes equally valuable. If you visit a machine tool manufacturer you'll probably discover power files at work on such jobs as "balancing" cast-iron pulleys. Makers of fire fighting equipment touch up such parts as brass nozzles, prior to polishing.



Cylindrical bur in drill press deburring cut-out area of plate.

Styles for every purpose



In pattern shops, the ball shape forms fillets of metal match plates and removes burs in drilled holes, especially on concave or convex surfaces. The inverted cone shape is just right to get at the corners of sheet metal boxes where the excess metal is to be removed.

This, of course, is only a partial list of suggested applications which would run into hundreds. In using rotary files and ground burs instead of abrasive stones and grindstone tips, the filer has the advantage of greater speed and the knowledge that his tools will not clog or grime up, shatter or break.

Anatomy

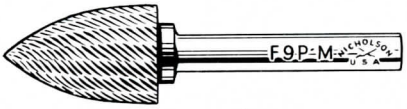
Rotary files and burs may be defined as power tools, used with flexible shaft or stationary shaft machines, portable electric or air tools, with teeth or flutes cut or ground on the surface and used for abrading and smoothing metals and other materials.

Expanding this definition, we find that the business end of the tool is the "head" or "cut section" and that these heads come in a variety of shapes from the cylindrical to the tree shaped, ball and inverted cone. Length usually refers to head or cut section. Tip is called the point or nose depending on whether it is rounded or pointed. The part of the head from which the shank extends is called the "base" or the "heel". The teeth or flutes generally come in two degrees of coarseness, i.e., coarse (C) and medium (M)—the choice depending on the amount of stock to be removed and the finish desired. Shanks are usually ¼" in diameter on files and burs used for heavy and medium jobs, ⅛" when the tool is designed for use on relatively delicate operations.

Hand Cut Versus Ground from Solid

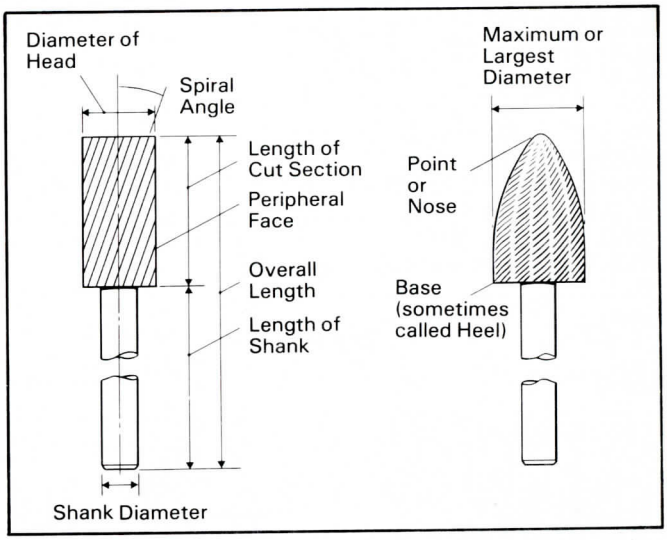
We now start to appraise the differences between the hand cut and ground, each made from high speed steel.

As their name indicates, hand cut rotary files are cut by an expert hand-cutter, using a hammer and a chisel to cut or form each tooth. Although he may have a blueprint to guide him, the hand-cutter depends upon his ability to hold the chisel at just the correct angle and to strike a blow of just the right force.



Rotary file

Because the teeth of hand cut rotary files are "broken up," in contrast to the "unbroken flutes" of the ground bur, they are better fitted for work on tough and dense metals. These teeth seem to dissipate the heat created by the friction of the file on this type of material. Therefore they are recommended for steel forgings, or any scaly tough dense surface or metal.



Ground Burs

Ground burs are cut with a series of unbroken flutes instead of the "broken up" teeth characteristic of hand cut files. Basic flutes extend the full length of the cutting head, from the base to the nose, and intermediate flutes cut into the basic flutes at appropriate places. Some ground burs are made with "alternate fluting," which means that every other flute extends to the extreme point of the tool.

The flutes of the ground bur are cut by an operator using a grinding wheel. While a "free hand" method of grinding is quite common, the Nicholson method calls for precision machine grinding which insures accuracy of shape and even tooth height around the periphery, the latter feature eliminating jumping, vibration and non-uniform wear. Each bur is cut on a machine actuated by a master bur guaranteeing absolute uniformity of burs of the same type and size, no matter how many are produced.

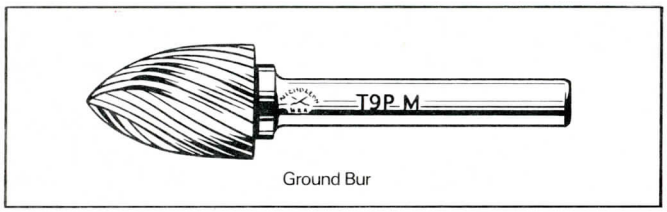
In general, ground burs are much more efficient than hand cut rotary files on non-ferrous metals such as aluminum, brass, bronze and magnesium. Because of the ductility to these metals, burs are ideal cutting tools, since their ground teeth free themselves readily of chips.

Tips on Using Files and Burs

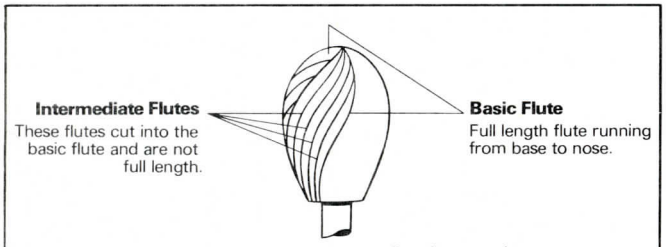
Rotary files and ground burs can be used in drill presses, lathes and electrically or air-operated hand or flexible shaft equipment. There is very little difference in the efficiency of files or burs in electric tools as compared to air tools, providing that the speeds have been reasonably well selected. The choice between electric and air tools is usually determined by the equipment which is available in a given plant.

The following principles should help the user toward the best results:

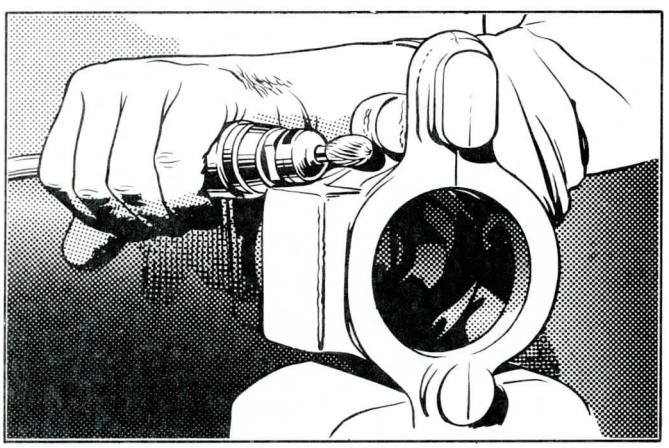
A—Move the file or bur at an even rate and pressure to avoid the "hills and dales" which will show up if an unsteady pressure is applied.
B—The speed at which the bur can be driven depends to a great extent on the size of the bur. The smaller the bur, the faster the speed. (see chart).
C—Be sure to use sharp files or burs. Never overlook the fact that the operator's time is the big cost item and he needs well sharpened tools.
D—Use a short grip on the shank for accurate control and a longer grip for reaching the out-of-the-way places.
E—Normally, medium cut files or burs will give sufficient stock removal and acceptable finish to meet most needs. However, if heavier cutting or greater stock removal is required, coarse cut should be used.



Ground Bur



Basic flute together with intermediate flutes cutting into basic flute is designated as a "Section."

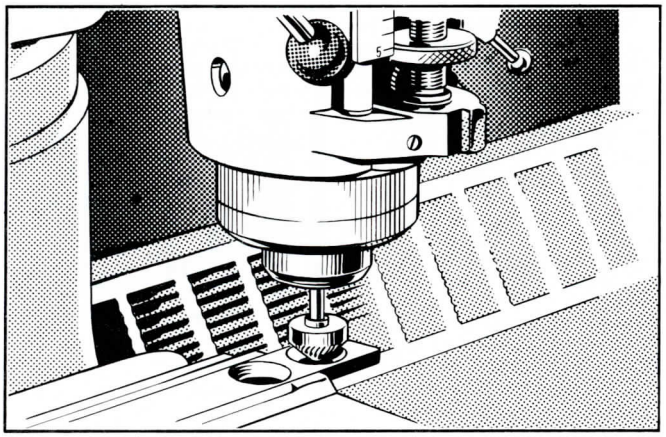

An oval shaped bur smoothing edges of concave section. Flexible shaft machine is used.

How about Speeds

It is extremely difficult to give the correct recommendations because the speed is bound to vary with the skill and technique of the operator; the type of power which is being used; the material which is being removed or finished; the type of operation-finishing stock removal, etc. A certain amount of flexibility is obtained in that higher speeds than normal tend towards a better finish but less stock removal while slower than normal speeds give greater stock removal but a poorer finish.
The table below is given in revolutions per minute rather than in surface feet per minute because the former are more conveniently used. It is very important, however, that any table of speeds should specify the diameter of the bur which is to be used at the recommended speed, because the surface feet per minute is the basis of calculation.
Undoubtedly many instances can be cited in which burs have been used successfully at speeds much higher than those in our table. The best way is to determine from experience what speeds will give the most satisfactory results on a particular job. It should also be borne in mind that flexible shaft machines have a limited number of speeds and that these govern to a considerable extent the revolutions per minute which can be used.

Approximate Speeds (R.P.M.) For High Speed Steel Rotary Files and Burs in Medium Cut

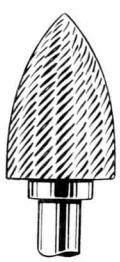
Head Dia.	Mild Steel	Cast Iron	Bronze	Aluminum	Magnesium
1/8"/3mm	4600	7000	15000	20000	30000
1/4"/6mm	3450	5250	11250	15000	22500
3/8"/10mm	2750	4200	9000	12000	18000
1/2"/13mm	2300	3500	7500	10000	15000
5/8"/16mm	2000	3100	6650	8900	13350
3/4"/19mm	1900	2900	6200	8300	12400
7/8"/22mm	1700	2600	5600	7500	11250
1"/25mm	1600	2400	5150	6850	10300
1 1/8"/29mm	1500	2300	4850	6500	9750
1 1/4"/32mm	1400	2100	4500	6000	9000


Cone shaped bur in drill press deburring drilled holes in plate.

Summing It Up

Carbide Bur
The carbide bur can do any job that the high speed ground bur or the hand cut rotary file can do. However, it is most efficient on the long production runs.

High Speed Ground Bur
The high speed ground bur is used principally on the non-ferrous metals and other soft materials.



Hand Cut Rotary File
The hand cut rotary file is used primarily on the ferrous metals and other hard materials.

Nicholson® Carbide Burs

The carbide bur is one of the most recent developments among modern cutting tools. It has tremendous possibilities for reducing burring costs in its particular applications, foremost of which is likely to be found on long production runs.

For example, it has been demonstrated that a carbide bur will last up to one hundred times as long as a high speed steel bur of corresponding shape and size. On the other hand, it costs about five times more. Assuming that the production life of the carbide bur is seventy-five times greater and the cost five more, there is a ratio of fifteen to one in its favor. And there are other factors.

The carbide bur may be used on hard or soft materials with equally good results. Made of extremely hard material, the flutes of the carbide bur will retain their maximum cutting efficiency a great deal longer than those made of high speed steel, thus eliminating change-over costs. A skillful operator, especially if he is working on a piece or bonus system, appreciates the fact that his tool is working at full efficiency and has not reduced his earning power because it is partly worn out—although not sufficiently worn to be discarded.

Anatomy

The anatomy of the carbide bur is much the same as that of the high speed bur, the principal difference lying in the fact that the former is made of carbide. Of course, the rake and coarseness of teeth are changed somewhat to conform to the peculiarities of carbide, the negative rake rather than the radial producing a construction of the greatest strength.

Most carbide burs have index fluting, meaning that all flutes converge to a common point.

Diamond cut carbide burs are recommended for tough die steels. These "double-cut" burs have flutes that intersect each other. These throw off small, irregular particles, rather than sharp pointed slivers.

The carbide used in these burs has the highest Rockwell Hardness consistent with necessary toughness. While every effort is made to combine hardness and toughness, carbide burs are nevertheless relatively brittle and must be treated more gingerly than ordinary burs. They cannot stand as much abuse. Under no circumstances must they be tossed onto a bench or into a tool box where their cutting edges may be damaged.

Remember that if one carbide bur is injured, the loss is about fifteen times as great as that of a high speed bur—and savings are greatly reduced.

Coarseness Chart

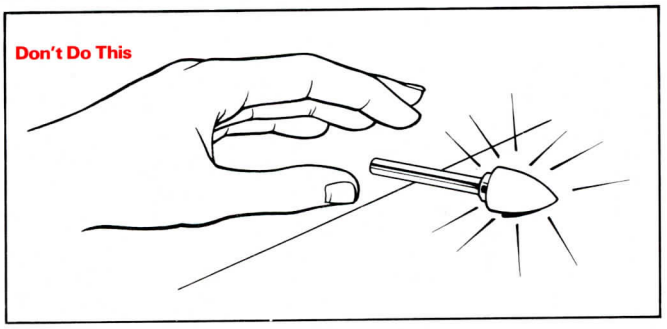
Rotary Files

Dia. ″/mm	Teeth Per Inch Coarse	Medium
1/8″/3mm	14	20
3/16″/4.7mm	14	20
1/4″/6mm	14	20
5/16″/8mm	12	18
3/8″/10mm	12	18
7/16″/11mm	12	18
1/2″/13mm	12	18
5/8″/16mm	12	18
3/4″/19mm	12	18
7/8″/22mm	12	18
1″/25mm	10	15
1 1/8″/28mm	10	15

Ground Burs H.S.

Dia. ″/mm	Flutes Per Circumference Coarse	Medium
1/8″/3mm	7	10
3/16″/4.7mm	9	13
1/4″/6mm	10	16
5/16″/8mm	12	18
3/8″/10mm	14	20
7/16″/11mm	15	22
1/2″/13mm	16	24
5/8″/16mm	18	27
3/4″/19mm	20	30
7/8″/22mm	22	33
1″/25mm	24	36
1 1/8″/28mm	26	39

Take Care of Your Tools



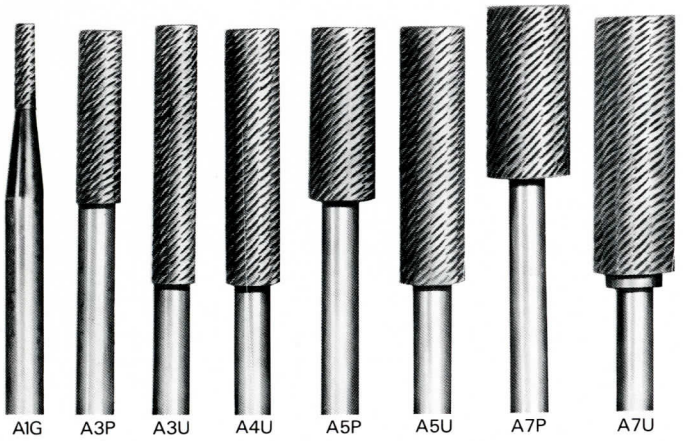
**Protect your eyes—
always wear safety goggles.**

T.M.

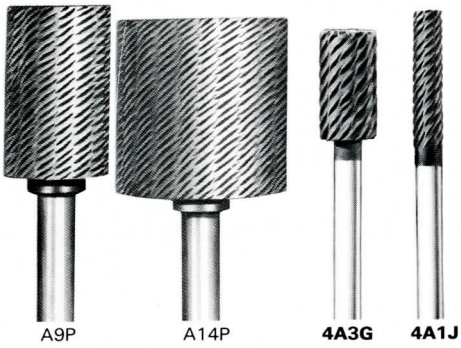
High speed steel rotary files

Hand cut rotary files with ¼"/6mm shanks. Stocked in Coarse, Medium and some fine cuts. Note: A limited number of files available in ⅛"/3mm shanks. **For easier identification of ⅛"/3mm file, code numbers are in bold.**

Cylindrical shape–flat end hand cut style "A"



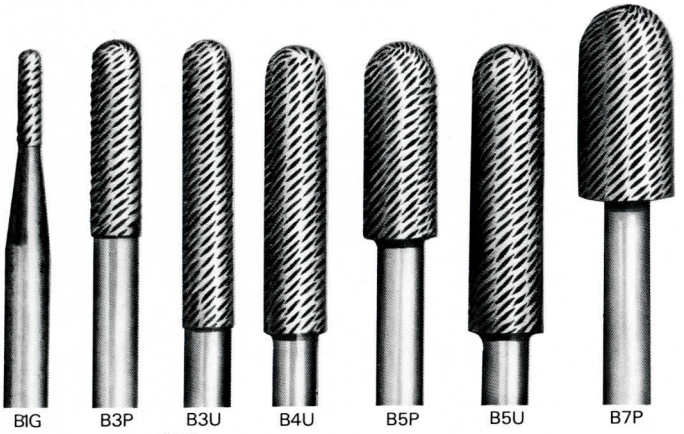
Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Fine	Shank "/mm
A1G	⅛/3 x ½/13	50001*	50003*	–	¼/6
A3P	¼/6 x 1/25	50013* 50019	50015* 50021	–	¼/6
A3U	¼/6 x 1½/38	50025	50027	–	¼/6
A4U	5/16/8 x 1½/38	–	50033	–	¼/6
A5P	⅜/9 x 1/25	50037	50039	–	¼/6
A5U	⅜/9 x 1½/38	50043	50045	–	¼/6
A7P	½/13 x 1/25	50049	50051	50053	¼/6
A7U	½/13 x 1½/38	50055	50057	50059	¼/6



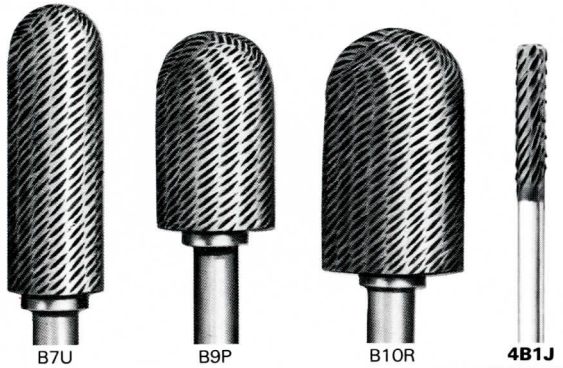
Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Fine	Shank "/mm
A9P	5/8/16 x 1/25	–	50063	–	¼/6
A10K**	¾/19 x ¾/19	–	50075	–	¼/6
A14P	1/25 x 1/25	–	50081	–	¼/6
4A3G	¼/6 x ½/13	–	**51029**	–	⅛/3
4A1J	⅛/3 x 5/8/76	–	**51031**	–	⅛/3

*Have uncut ends.
**Not illustrated

Cylindrical shape–radius end hand cut style "B"

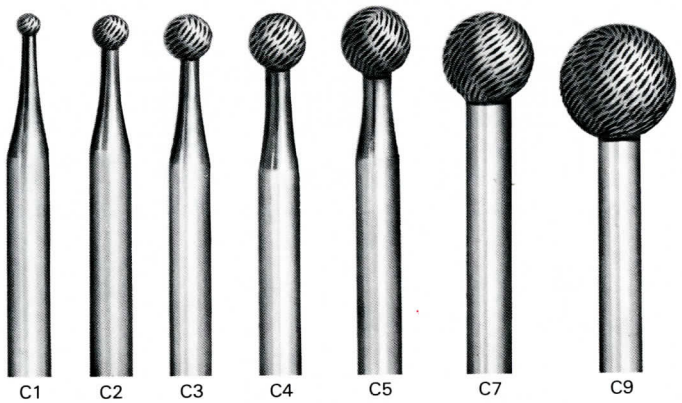


Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank "/mm
B1G	⅛/3 x ½/13	–	50087	¼/6
B3P	¼/6 x 1/25	50091	50093	¼/6
B3U	¼/6 x 1½/38	50097	50099	¼/6
B4U	5/16/8 x 1½/38	–	50105	¼/6
B5P	⅜/9 x 1/25	50109	50111	¼/6
B5U	⅜/9 x 1½/38	–	50117	¼/6
B7P	½/13 x 1/25	50121	50123	¼/6
B7U	½/13 x 1½/38	–	50129	¼/6

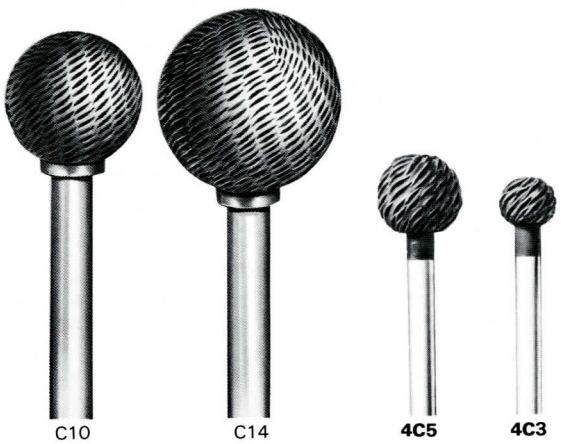


Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank "/mm
B9P	5/8/16 x 1/25	–	50135	¼/6
B10R	¾/19 x 1¼/32	–	50141	¼/6
4B1J	⅛/3 x 5/8/16	–	**51035**	⅛/3

Ball shape hand cut style "C"



Ref. No.	Dia. ″/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Fine	Shank ″/mm
C1	1/8/3	—	50147	—	1/4/6
C2	3/16/5	—	50153	—	1/4/6
C3	1/4/6	50157	50159	50161	1/4/6
C4	5/16/8	—	50165	—	1/4/6
C5	3/8/9	50169	50171	—	1/4/6
C7	1/2/13	—	50177	—	1/4/6
C9	5/8/16	—	50183	—	1/4/6



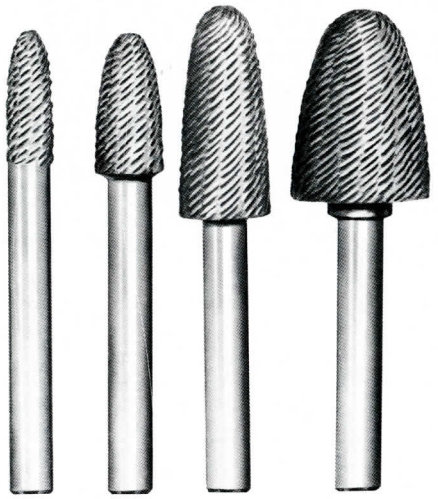
Ref. No.	Dia. ″/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Fine	Shank ″/mm
C10	3/4/19	—	50189	—	1/4/6
C14	1/25	—	50195	—	1/4/6
4C5	3/8/9	—	**51039**	—	1/8/3
4C3	1/4/6	—	**51041**	—	1/8/3

Oval shape hand cut style "D"

Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank ″/mm
D3G	1/4/6 x 1/2/13	—	50201	1/4/6
D5K	3/8/9 x 3/4/19	—	50207	1/4/6
D7M	1/2/13 x 7/8/22	—	50219	1/4/6
D9N	5/8/16 x 15/16/24	50223	50225	1/4/6

Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank ″/mm
D14S	1/25 x 1 3/8/35	—	50237	1/4/6
4D3G	1/4/6 x 1/2/13	—	**51043**	1/8/3

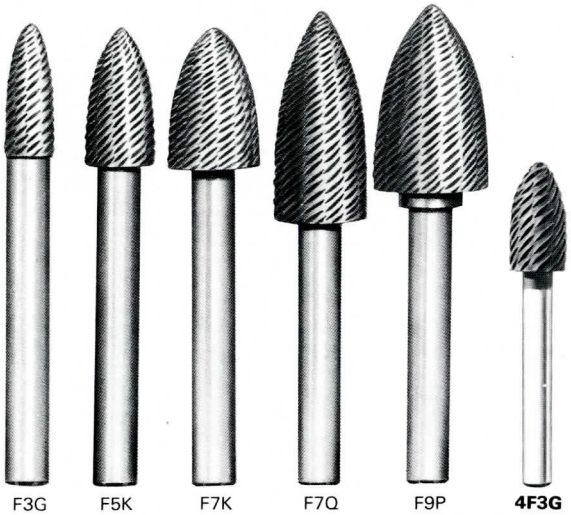
Tree shape–radius end hand cut style "E"



E3K E5K E7Q E10P

Ref. No.	Dia. x length " /mm x " /mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank " /mm
E3K	1/4/6 x 3/4/19	50241	50243	1/4/6
E5K	3/8/9 x 3/4/19	—	50249	1/4/6
E7Q	1/2/13 x 1 1/8/28	50253	50255	1/4/6
E10P	3/4/19 x 1/25	—	50261	1/4/6

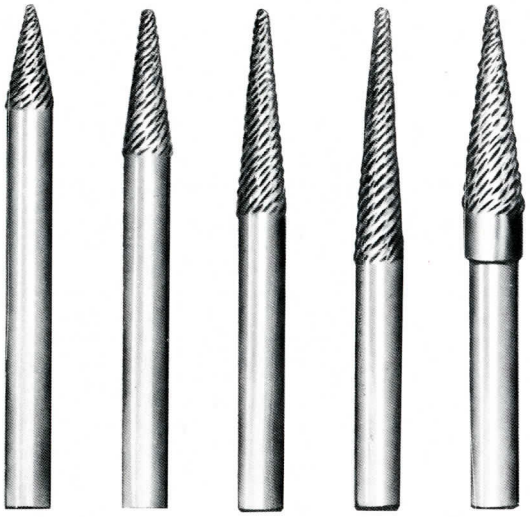
Tree shape–pointed end hand cut style "F"



F3G F5K F7K F7Q F9P **4F3G**

Ref. No.	Dia. x length " /mm x " /mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank " /mm
F3G	1/4/6 x 1/2/13	—	50273	1/4/6
F5K	3/8/9 x 3/4/19	50277	50279	1/4/6
F7K	1/2/13 x 3/4/19	—	50285	1/4/6
F7Q	1/2/13 x 1 1/2/38	—	50291	1/4/6
F9P	5/8/16 x 1/25	—	50297	1/4/6
4F3G	1/4/6 x 1/2/13	—	**51047**	1/8/3

Cone shape hand cut style "G"



G3G G3K G3P G3R G4P

Ref. No.	Dia. x length " /mm x " /mm	Included Angle	Cat. & N/S Nos. Medium	Shank " /mm
G3G	1/4/6 x 1/2/13	22°	50309	1/4/6
G3K	1/4/6 x 3/4/19	14°	50315	1/4/6
G3P	1/4/6 x 1/25	11°	50321	1/4/6
G3R	1/4/6 x 1 1/4/32	8°	50327	1/4/6
G4P	5/16/8 x 1/25	14°	50339	1/4/6

Continued on next page.

Cone shape hand cut style "G" cont.

G7M G9P **4G1H** **4G3C** **4G3G**

Ref. No.	Dia. x length "/mm x "/mm	Included Angle	Cat. & N/S Nos. Medium	Shank "/mm
G7M	1/2/13 x 7/8/22	28°	50351	1/4/6
G9P	5/8/16 x 1/25	32°	50357	1/4/6
4G1H	1/8/3 x 9/16/14	—	**51053**	1/8/3
4G3C	1/4/6 x 1/4/6	60°	**51051**	1/8/3
4G3G	1/4/6 x 1/2/13	25°	**51049**	1/8/3

Cone shape 90° angle hand cut style "J"

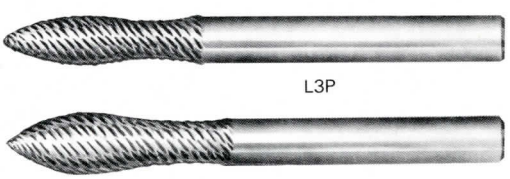
J7 J9 J10 J14

Ref. No.	Dia. "/mm.	Included Angle	Cat. & N/S Nos. Medium	Shank "/mm
J7	1/2/13	90°	50399	1/4/6
J9	5/8/16	90°	50405	1/4/6
J10	3/4/19	90°	50411	1/4/6
J14	1/25	90°	50417	1/4/6

Flame shape hand cut style "K"

Ref. No.	Dia. x length "/mm x "/mm	Cat. & N/S Nos. Medium	Shank "/mm
K9T	5/8/16 x 1 7/16/36	50429	1/4/6

Bi-Shape hand cut style "L"

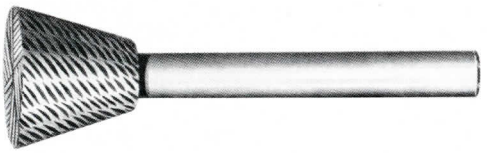


L3P

L4Q

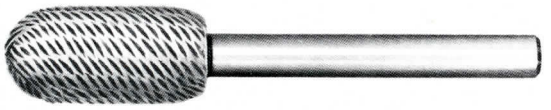
Ref. No.	Dia. x length "/mm x "/mm x "/mm	Cat. & N/S Nos. Medium	Shank "/mm
L3P	1/4/6 x 1/25 7/8/22 Radius	50441	1/4/6
L4Q	5/16/8 x 1 1/8/28 1 1/8/28 Radius	50447	1/4/6

Inverted cone shape 33° included angle hand cut style "M"



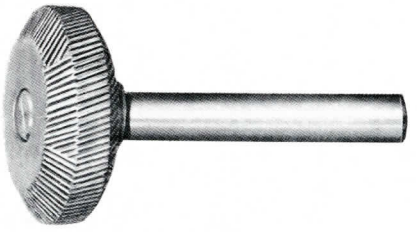
Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank ″/mm
M10J	3/4/19 x 5/8/16	50457	50459	1/4/6

Barrel shape hand cut style "CC"



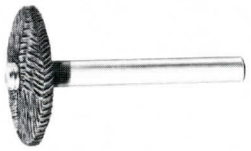
Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Medium	Shank ″/mm
CC7P	1/2/13 x 1/25	50477	1/4/6

Cylindrical shape double taper 60° included angle hand cut style "DD"



Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Medium	Shank ″/mm
DD15E	1 1/8/28 x 3/8/9	50483	1/4/6

Cylindrical shape radius end and edge

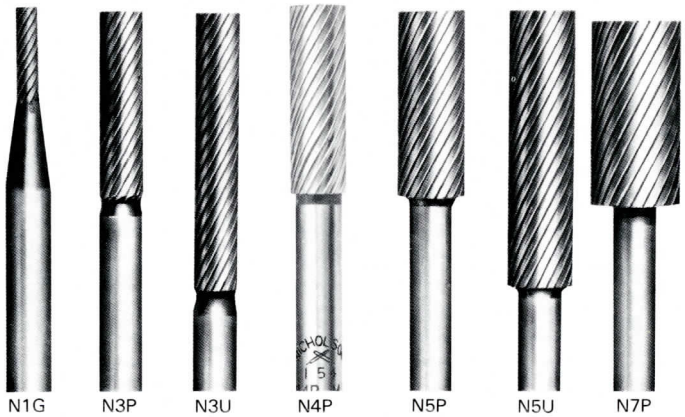


Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Medium	Shank ″/mm
4H9A	5/8/16 x 1/8/3	**51037**	1/8/3

High speed steel ground burs

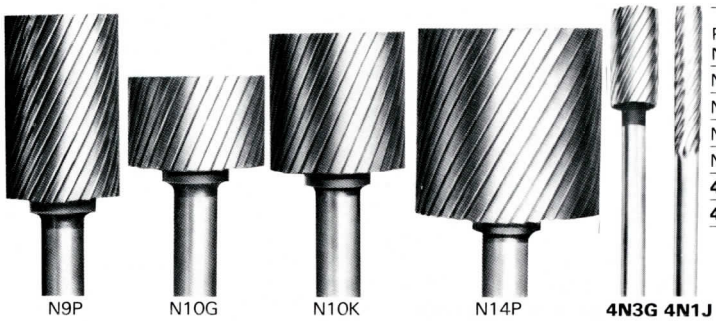
Ground burs with ¼"/6mm shanks. Stocked in coarse and medium cuts. Note: limited number of burs available with ⅛"/3mm shanks for use with portable hand tools (electric or air), drill press or felxible shaft. **For easier identification of ⅛"/3mm burs, code numbers are in bold.**

Cylindrical shape–flat end ground bur style "N"



N1G N3P N3U N4P N5P N5U N7P

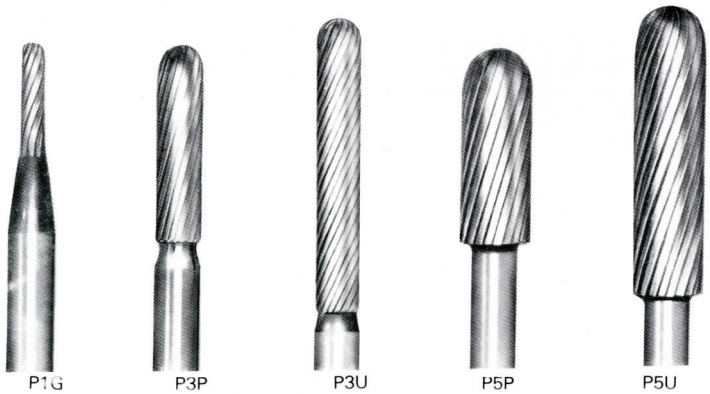
Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank "/mm
N1G	⅛/3 x ½/13	—	50489	¼/6
N3P	¼/6 x 1/25	50499	50501	¼/6
N3U	¼/6 x 1½/38	—	50513	¼/6
N4P	5/16/8 x 1/25	—	50525	¼/6
N5P	⅜/9 x 1/25	50535	50537	¼/6
N5U	⅜/9 x 1½/38	—	50549	¼/6
N7P	½/13 x 1/25	50559	50561	¼/6



N9P N10G N10K N14P **4N3G 4N1J**

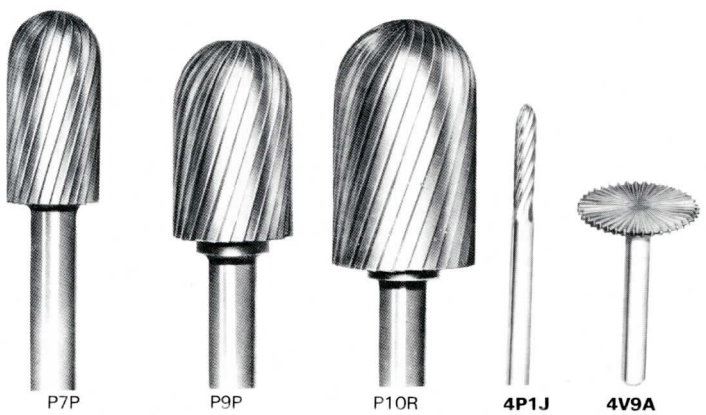
Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank "/mm
N9P	5/8/16 x 1/25	—	50573	¼/6
N10G	¾/19 x ½/13	—	50585	¼/6
N10K	¾/19 x ¾/19	50595	50597	¼/6
N14P	1/25 x 1/25	—	50609	¼/6
4N3G	¼/6 x ½/13	—	**51065**	⅛/3
4N1J	⅛/3 x 5/8/16	—	**51067**	⅛/3

Cylindrical shape–radius end ground bur style "P"



P1G P3P P3U P5P P5U

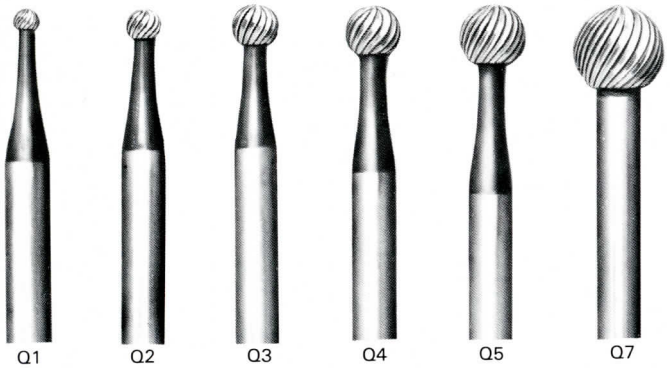
Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank "/mm
P1G	⅛/3 x ½/13	—	50621	¼/6
P3P	¼/6 x 1/25	50625	50627	¼/6
P3U	¼/6 x 1½/38	—	50633	¼/6
P5P	⅜/9 x 1/25	—	50639	¼/6
P5U	⅜/9 x 1½/38	—	50645	¼/6



P7P P9P P10R **4P1J** **4V9A**

Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank "/mm
P7P	½/13 x 1/25	50649	50651	¼/6
P9P	5/8/16 x 1/25	—	50657	¼/6
P10R	¾/19 x 1¼/32	—	50663	¼/6
4P1J	⅛/3 x 5/8/16	—	**51071**	⅛/3
4V9A	5/8/16 x ⅛/3	—	**51073**	⅛/3

Ball shape ground bur style "Q"

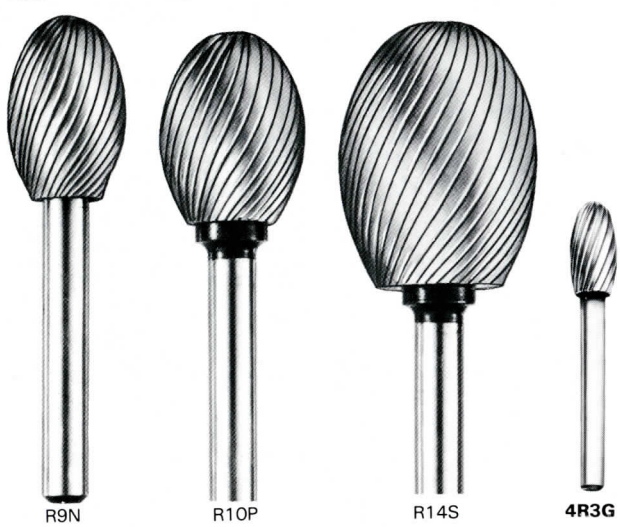


Ref. No.	Dia. ″/mm	Catalog & Nida/Sida Numbers Medium	Shank ″/mm
Q1	1/8/3	50669	1/4/6
Q2	3/16/5	50675	1/4/6
Q3	1/4/6	50681	1/4/6
Q4	5/16/8	50687	1/4/6
Q5	3/8/9	50693	1/4/6
Q7	1/2/13	50699	1/4/6

Ref. No.	Dia. ″/mm	Catalog & Nida/Sida Numbers Medium	Shank ″/mm
Q9	5/8/16	50705	1/4/6
Q10	3/4/19	50711	1/4/6
Q14	1/25	50717	1/4/6
4Q5	3/8/9	**51075**	1/8/3
4Q3	1/4/6	**51077**	1/8/3

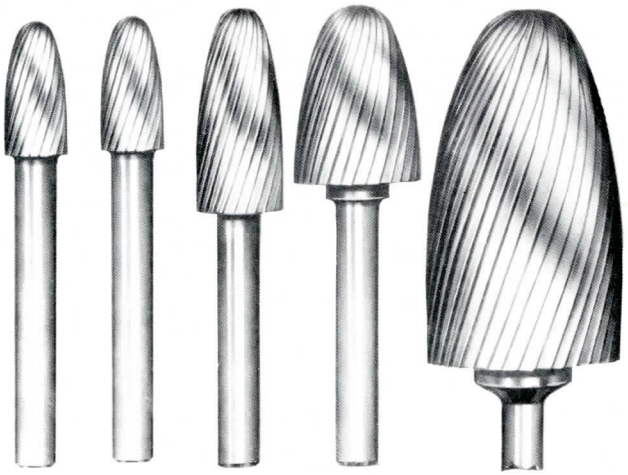
Oval shape ground bur style "R"

Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Medium	Shank ″/mm
R3G	1/4/6 x 1/2/13	50723	1/4/6
R5K	3/8/9 x 3/4/19	50729	1/4/6
R6L	7/16/11 x 1 3/16/21	50735	1/4/6
R7M	1/2/13 x 7/8/22	50741	1/4/6



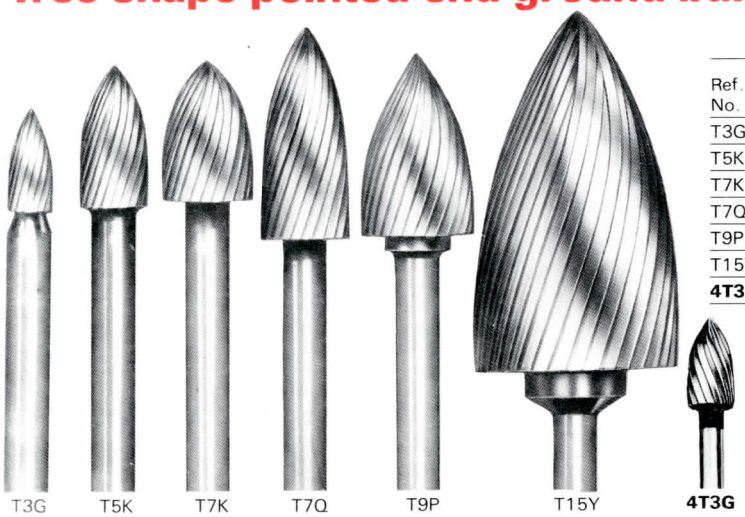
Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Medium	Shank ″/mm
R9N	5/8/16 x 5/16/24	50747	1/4/6
R10P	3/4/19 x 1/25	50753	1/4/6
R14S	1/25 x 1 3/8/35	50759	1/4/6
4R3G	1/4/6 x 1/2/13	**51079**	1/8/3

Tree shape radius end ground bur style "S"



Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank ″/mm
S3K	1/6 x 3/4/19	50769	50771	1/6
S5K	3/8/9 x 3/4/19	—	50777	1/6
S7Q	1/2/13 x 1 1/8/28	50781	50783	1/6
S10P	3/4/19 x 1/25	—	50789	1/6
S15Y	1 1/8/28 x 2/50	—	50795	1/6

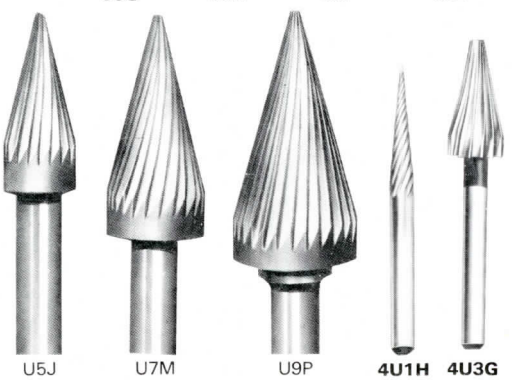
Tree shape pointed end ground bur style "T"



Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Coarse	Medium	Shank ″/mm
T3G	1/6 x 1/2/13	—	50801	1/6
T5K	3/8/9 x 3/4/19	—	50807	1/6
T7K	1/2/13 x 3/4/19	—	50813	1/6
T7Q	1/2/13 x 1 1/8/28	—	50819	1/6
T9P	5/8/16 x 1/25	—	50825	1/6
T15Y	1 1/8/28 x 2/50	—	50831	1/6
4T3G	1/6 x 1/2/13	—	**51083**	1/3

Cone shape ground bur style "U"

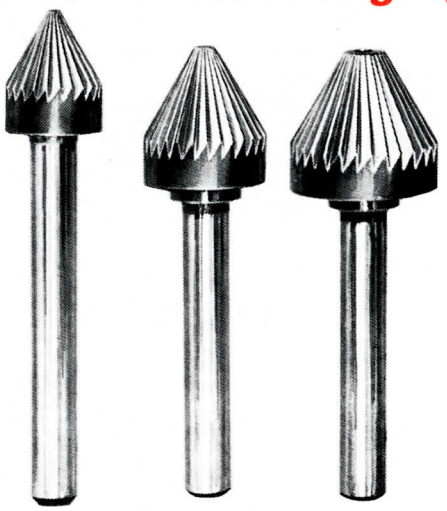
Ref. No.	Dia. x length ″/mm x ″/mm	Included Angle	Cat. & N/S Nos. Medium	Shank ″/mm
U3G	1/6 x 1/2/13	22°	50837	1/6
U3K	1/6 x 3/4/19	14°	50843	1/6
U3P	1/6 x 1/25	11°	50849	1/6
U3R	1/6 x 1 1/4/32	8°	50855	1/6
U4P	5/16/8 x 1/25	14°	50867	1/6



Ref. No.	Dia. x length ″/mm x ″/mm	Included Angle	Cat. & N/S Nos. Medium	Shank ″/mm
U5J	3/8/9 x 5/8/16	28°	50873	1/6
U7M	1/2/13 x 7/8/22	28°	50879	1/6
U9P	5/8/16 x 1/25	32°	50885	1/6
4U1H	1/8/3 x 9/16/14	8°	**51089**	1/3
4U3G	1/6 x 1/2/13	25°	**51085**	1/3
4U3C*	1/6 x 1/4/6		**51087**	1/3

*Not illustrated

Cone shape 60° included angle ground bur style "V"



V7 V9 V10

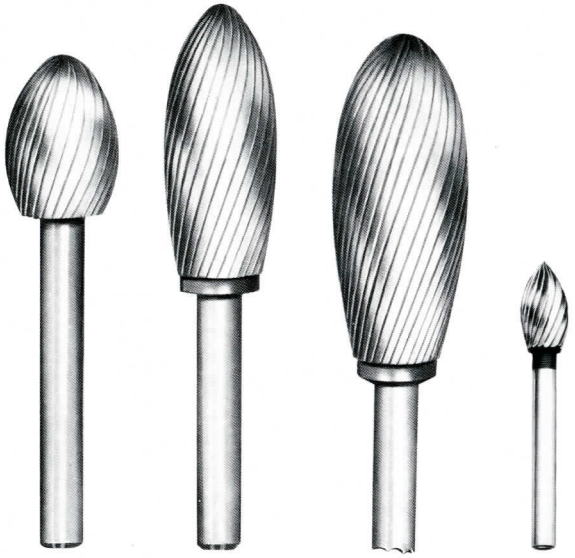
Ref. No.	Dia. "/mm	Included Angle	Cat. & N/S Nos. Medium	Shank "/mm
V7	1/2/13	60°	50897	1/4/6
V9	5/8/16	60°	50903	1/4/6
V10	3/4/19	60°	50909	1/4/6

Cone shape 90° included angle ground bur style "W"

W7 W14

Ref. No.	Dia. "/mm	Included Angle	Cat. & N/S Nos. Medium	Shank "/mm
W7	1/2/13	90°	50927	1/4/6
W14	1/25	90°	50945	1/4/6

Flame shape ground bur style "X"



X9M X9T X10W **4X3G**

Ref. No.	Dia. x length "/mm x "/mm	Cat. & N/S Nos. Medium	Shank "/mm
X9M	5/8/16 x 7/8/22	50951	1/4/6
X9T	5/8/16 x 1 7/16/36	50957	1/4/6
X10W	3/4/19 x 1 3/4/44	50963	1/4/6
4X3G	1/4/6 x 1/2/13	**51095**	1/8/3

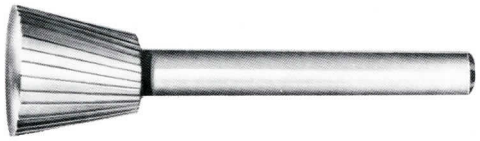
Bi-shape ground bur style "Y"

Y3P

Y4Q

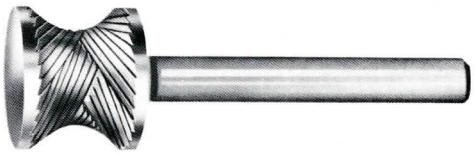
Ref. No.	Dia. x length ″/mm x ″/mm x ″/mm	Catalog & N/S Nos. Medium	Shank ″/mm
Y3P	1/4/6 x 1/25 x 7/8/22 Radius	50969	1/4/6
Y4Q	5/16/8 x 1 1/8/29 x 1 1/8/29 Radius	50975	1/4/6

Inverted cone shape 33° included angle ground bur style "Z"



Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & N/S Nos. Medium	Shank ″/mm
Z10J	3/4/19 x 5/8/16	50987	1/4/6

Concave shape type 1 - 2549 radius ground bur style "NN"

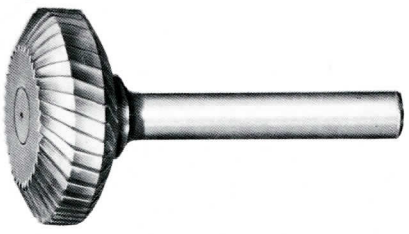


Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & N/S Nos. Medium	Shank ″/mm
NN10J	3/4/19 x 5/8/16	50999	1/4/6

Barrel shape ground bur style "QQ"

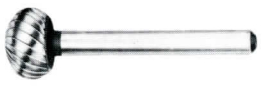
Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & N/S Nos. Medium	Shank ″/mm
QQ7P	1/2/13 x 1/25	51011	1/4/6

Cylindrical shape double taper 60° included angle ground bur style "RR"



Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & N/S Nos. Medium	Shank ″/mm
RR15E	1 1/8/28 x 3/8/9	51017	1/4/6

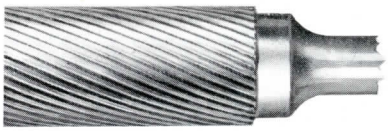
Flat top ball shape



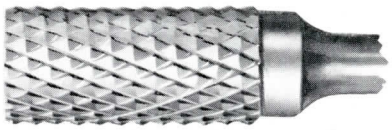
Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & N/S Nos. Medium	Shank ″/mm
4Y5C	3/8/9 x 7/32/5.5	**51097**	1/8/3

Tungsten carbide burs

Nicholson carbide burs are precision ground from tungsten carbide blanks. All our carbide burs which have ¼" /6mm diameter heads or less are made from solid carbide, which eliminates the possibility of the heads of these small tools snapping off at the braze. Burs over ¼" /6mm diameter are made with carbide heads brazed to heat treated steel shank 2 inches/50mm long.
Nicholson carbide burs can be reground many times at a small part of the original cost of the tool.



Standard Cut



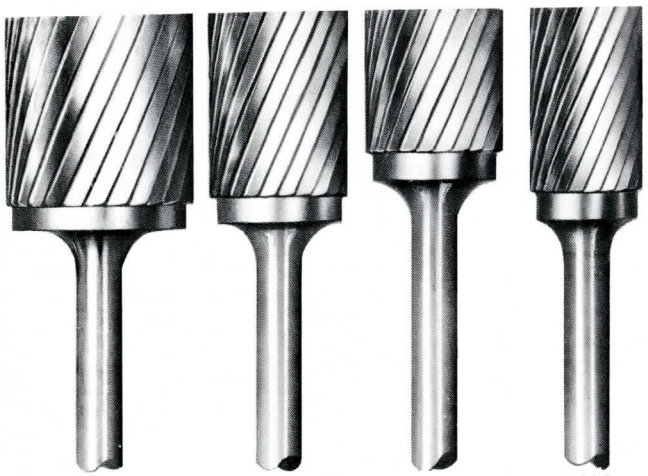
Diamond Cut

Recommended speeds on page 51.

Carbide burs with ¼"/6mm shanks

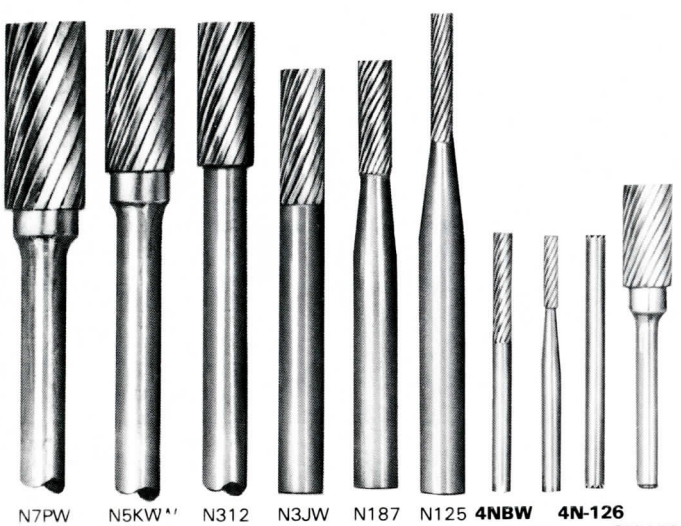
Note: A limited number of Carbide burs are available with ⅛" /3mm shanks. **For easier identification of ⅛"/3mm burs, code numbers are in bold.**

Cylindrical flat end



N100 N750 N751 N625

Ref. No.	Dia. x length " /mm x " /mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Diamond end Cut Std.	End Cut Std.	Shank " /mm
N100	1/25 x 1/25	51421	—	—	—	¼/6
N750	¾/19 x 1/25	51397	—	—	—	¼/6
N751	¾/19 x ¾/19	51373	—	—	—	¼/6
N625	⅝/16 x 1/25	51325	51337	—	—	¼/6

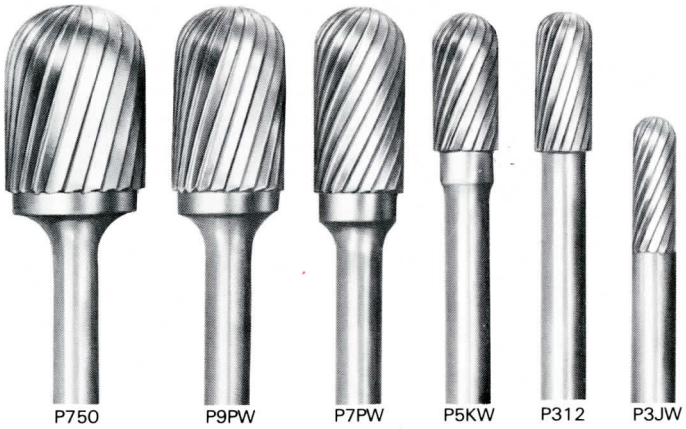


N7PW N5KW* N312 N3JW N187 N125 **4NBW** **4N-126** **4NCW** **8N-250**

Ref. No.	Dia. x length " /mm x " /mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Diamond end Cut Std.	End Cut Std.	Shank " /mm
N7PW*	1/2/13 x 1/25	51301	51313	51319	51307	¼/6
N5KW*	⅜/9 x ¾/19	51253	51265	—	51259	¼/6
N312*	5/16/8 x ¾/19	51229	—	—	51235	¼/6
N3JW*	¼/6 x ⅜/16	51205	51217	—	51211	¼/6
N187	3/16/5 x ⅜/16	51181	51193	—	—	¼/6
N125	⅛/3 x ½/13	51133	—	—	—	¼/6
4NBW	⅛/3 x 9/16/14	**52501**	—	—	—	⅛/3
4NCW	3/32/2 x 7/16/11	**52525**	—	—	—	⅛/3
4N-126	⅛/3 x 9/16/14	**52573**	—	—	—	⅛/3
8N-250	¼/6 x ½/13	**52975**	—	—	—	⅛/3

*Can be furnished with cut end
Note: ⅛" /3mm burs not illustrated.

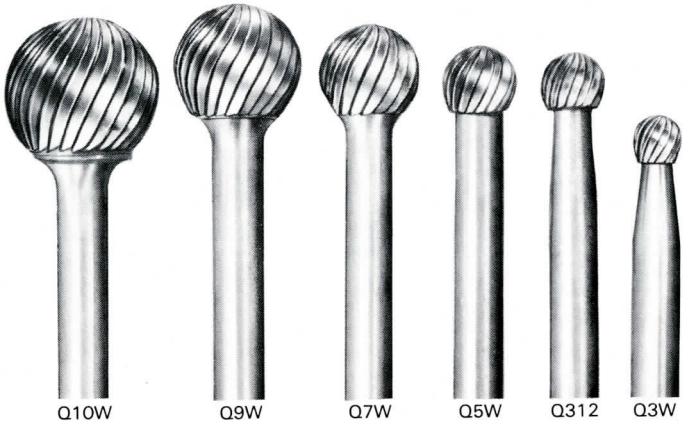
Cylindrical radius end



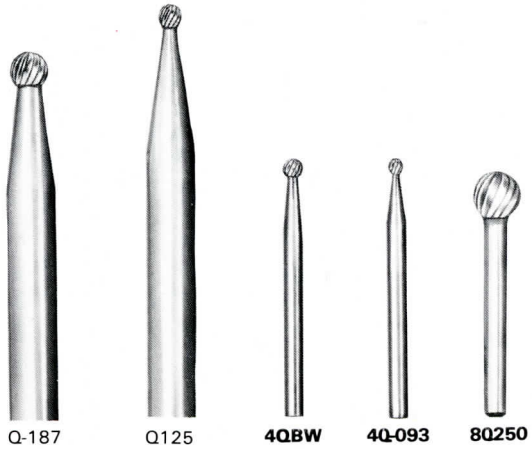
Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
P750	3/4/19 x 1/25	51553	—	1/4/6
P9PW	5/8/16 x 1/25	51541	—	1/4/6
P7PW	1/2/13 x 1/25	51529	51535	1/4/6
P5KW	3/8/9 x 3/4/19	51505	51511	1/4/6
P312	5/16/8 x 3/4/19	51493	—	1/4/6

Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
P3JW	1/4/6 x 5/8/16	51481	51487	1/4/6
P187	3/16/5 x 5/8/16	51469	—	1/4/6
P156	5/32/4 x 5/8/16	51457	—	1/4/6
P125	1/8/3 x 1/2/13	51445	—	1/4/6
4PBW	1/8/3 x 9/16/14	**52579**	—	1/8/3
4PCW	3/32/2 x 7/16/11	**52591**	—	1/8/3

Ball shape



Ref. No.	Dia. x length ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
Q10W	3/4/19	51661	—	1/4/6
Q9W	5/8/16	51649	—	1/4/6
Q7W	1/2/13	51637	51643	1/4/6
Q5W	3/8/9	51613	51619	1/4/6
Q312	5/16/8	51601	—	1/4/6
Q3W	1/4/6	51589	51595	1/4/6

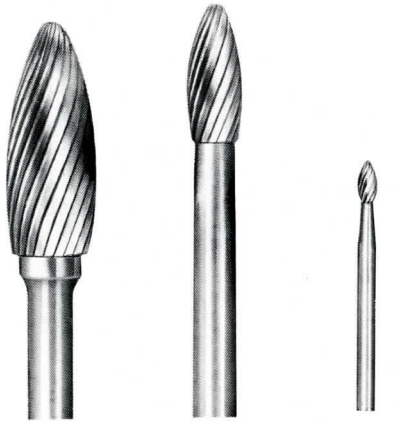


Ref. No.	Dia. x length ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
Q187	3/16/5	51577	—	1/4/6
Q125	1/8/3	51565	—	1/4/6
4QBW	1/8/3	**52603**	—	1/8/3
4Q-093	3/32/2	**52615**	—	1/8/3
8Q250	1/4/6	**53023**	—	1/8/3

Oval shape

Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
R9PW	5/8/16 x 1/25	51721	—	1/4/6
R7MW	1/2/13 x 7/8/22	51709	51715	1/4/6
R375	3/8/9 x 5/8/16	51697	51703	1/4/6
R250	1/4/6 x 3/8/10	51685	—	1/4/6
4RBW	1/8/3 x 7/32/5.5	**52627**	—	1/8/3

Flame shape

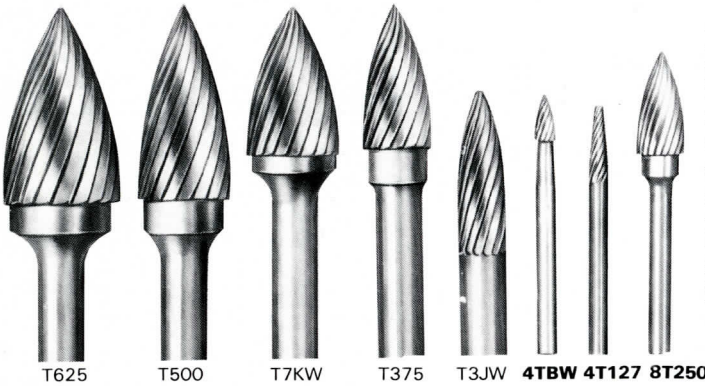


Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
X500	1/2/13 x 1 1/4/32	51757	51763	1/4/6
X312	5/16/8 x 3/4/19	51745	—	1/4/6
4XBW	1/8/3 x 1/4/6	**52747**	—	1/8/3

Tree shape radius end

Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
S752	3/4/19 x 1 1/4/32	51973	—	1/4/6
S625	5/8/16 x 1/25	51961	—	1/4/6
S7PW	1/2/13mm x 1/25	51949	—	1/4/6
S5KW	3/8/9 x 3/4/19	51913	51919	1/4/6
S3JW	1/4/6 x 5/8/16	51901	51907	1/4/6
4S125	1/8/3 x 1/2/13	**52639**	—	1/8/3
4SBW	1/8/3 x 1/4/6	**52651**	—	1/8/3

Tree shape pointed end

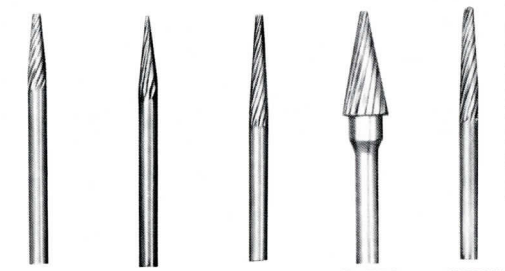


Ref. No.	Dia. x length ″/mm x ″/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank ″/mm
T625	5/8/16 x 1/25	52069	—	1/4/6
T500	1/2/13 x 1/25	52057	52063	1/4/6
T7KW	1/2/13 x 3/4/19	52045	—	1/4/6
T375	3/8/9 x 3/4/19	52033	52039	1/4/6
T3JW	1/4/6 x 5/8/16	52009	52015	1/4/6
4TBW	1/8/3 x 1/4/6	**52663**	—	1/8/3
4T127	1/8/3 x 3/8/9	**52687**	—	1/8/3
8T250	1/4/6 x 1/2/13	**53059**	—	1/8/3

Cone shape

U-500 U375 U250 U3JW U252

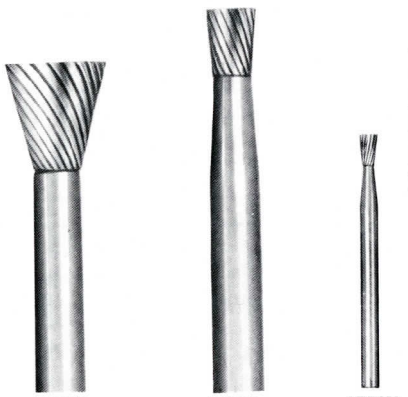
Ref. No.	Dia. "/mm	Included Angle	Cat. & N/S Nos. Standard	Shank "/mm
U-500	1/2 x 7/8/13 x 22	28°	52153	1/4/6
U375	3/8 x 5/8/9 x 16	28°	52141	1/4/6
U250	1/4 x 1/6 x 1/25	10°	52129	1/4/6
U3JW	1/4 x 3/4/6 x 19	14°	52117	1/4/6
U252	1/4 x 1/2/6 x 13	22°	52105	1/4/6



4U127 **4U125** **4U126** **8U250** **4UCW**

Ref. No.	Dia. "/mm	Included Angle	Cat. & N/S Nos. Standard	Shank "/mm
4U127	1/8 x 3/8/3 x 9	12°	**52699**	1/8/3
4U125	1/8 x 7/16/3 x 11	14°	**52711**	1/8/3
4U126	1/8 x 8/3 x 16	7°	**52723**	1/8/3
8U250	1/4 x 1/2/6 x 13	22°	**53071**	1/8/3
4UCW	1/8 x 1/2/3 x 13	8°	**52831**	1/8/3

Inverted cone



M500 M250 **4ZBW**

Ref. No.	Dia. x length "/mm x "/mm	Included Angle	Cat. & N/S No. Standard	Shank "/mm
M500	1/2 x 1/2/13 x 13	28°	51817	1/4/6
M250	1/4 x 5/16/6 x 8	10°	51793	1/4/6
4ZBW	1/8 x 3/16/3 x 5	10°	**52771**	1/8/3

Cone shape radius end 14° included angle

US625 US500 US375 US312 US250 **4V125**

Ref. No.	Dia. x length "/mm x "/mm	Catalog & Nida/Sida Numbers Standard	Diamond Cut Std.	Shank "/mm
US625	5/8/16 x 1 5/16/33	52477	—	1/4/6
US500	1/2/13 x 1 1/8/28	52465	52471	1/4/6
US375	3/8/9 x 1 1/16/27	52453	52459	1/4/6
US312	5/16/8 x 7/8/22	52441	—	1/4/6
US250	1/4 x 5/8/6 x 16	52429	—	1/4/6
4V125	1/8 x 60°/3 x 60°	**52735**	—	1/8/3

Recommended speeds for Nicholson® carbide burs

Table No. 1 Approx. recommended speeds for malleable iron —steel welds—cast iron—tool steels—die steels—naval bronze—brass—aluminum, etc.

Table No. 2 Approx. recommended speeds for stainless steels

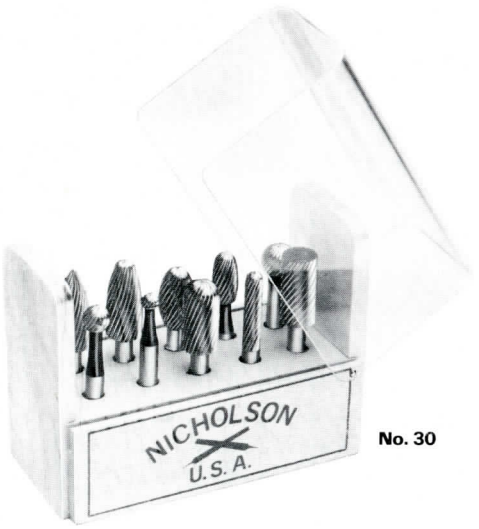
NOTE: Diamond Cut burs—reduce speeds by approx. $\frac{1}{3}$ to $\frac{1}{2}$—in corresponding Tables and Cuts shown.

Caution: Be sure to chuck bur shank true and to full capacity of the machine chuck.

Important: Recommended speeds are applicable only if bur is chucked to full length of shank supplied.

Bur Dia. "/mm	R.P.M. for Standard Table No. 1	Table No. 2
1/16/1.5	50,000	75,000
3/32/2	40,000	60,000
1/8/3	35,000	53,000
3/16/5	25,000	38,000
1/4/6	22,000	33,000
5/16/8	20,000	30,000
3/8/10	18,000	27,000
7/16/11	17,000	26,000
1/2/13	16,000	24,000
5/8/16	15,000	23,000
3/4/19	14,000	21,000
7/8/22	13,000	20,000
1/25	12,000	18,000

Rotary files and ground burs kits



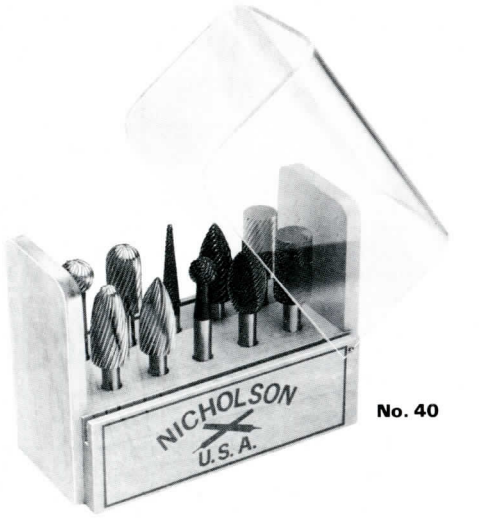
No. 30

Rotakit for rotary files – No. 30 (51107) 1/4"/6mm shanks

Ref. No.	Qty	Description
A3P	1	Cylindrical shape – flat end
A7P	1	Cylindrical shape – flat end
A10K	1	Cylindrical shape – flat end
C3	1	Ball shape
C5	1	Ball shape
D7M	1	Oval shape
F7Q	1	Tree shape – pointed end
G3R	1	Cone shape
L3P	1	Bi-shape
M10J	1	Inverted cone shape

Rotakit for ground burs – No. 20 (51101) 1/4"/6mm shanks

Ref. No.	Qty	Description
N7P	1	Cylindrical shape – flat end
P3P	1	Cylindrical shape – Radius end
P7P	1	Cylindrical shape – Radius end
Q3	1	Ball shape
Q5	1	Ball shape
Q7	1	Ball shape
R5K	1	Oval shape
R7M	1	Oval shape
S7Q	1	Tree shape – Radius end
T7Q	1	Tree shape – Pointed end



No. 40

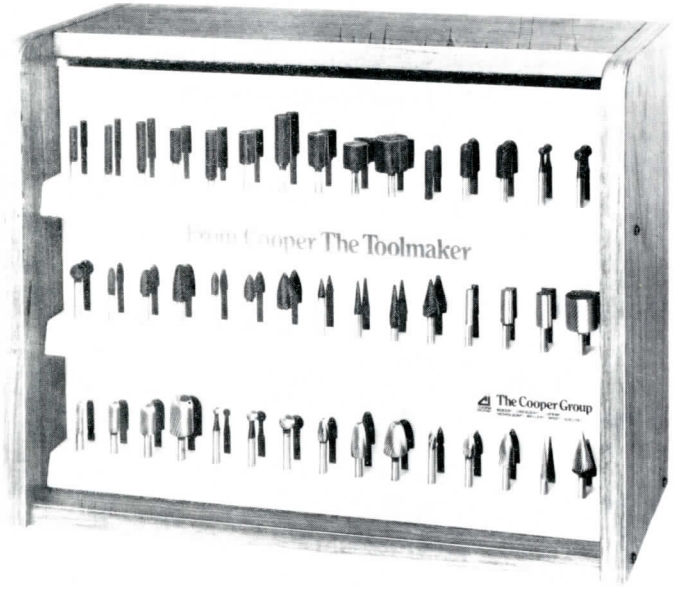
Rotakit for gound burs and rotary files No. 40 (51113) 1/4"/6mm shanks

Ref. No.	Qty	Description
Ground Burs		
N7P	1	Cylindrical shape – flat end
P7P	1	Cylindrical shape – radius end
Q7	1	Bell shape
S7Q	1	Tree shape – radius end
T7Q	1	Tree shape – pointed end
Rotary files		
A7P	1	Cylindrical shape – flat end
C5	1	Ball shape
D7M	1	Oval shape
G3R	1	Cone shape
F7Q	1	Tree shape – pointed end

Select-O-Stand

RD45 – $\frac{1}{4}$"/6mm shanks

A fast selling group of 45 high speed steel files and burs, all in one bright display designed for easy identification of each tool head. Contains 26 hand cut rotary files and 19 ground burs.



The contents of the RD45 is made up of one each of the following burs:

Hand Cut Rotary Files

Cat. No. / N/S No.	Ref. No.	Size " x " /mm x mm
Cylindrical shapes, flat ends		
50015	A3P	$\frac{1}{4}$ x 1/6 x 25
50027	A3U	$\frac{1}{4}$ x 1$\frac{1}{2}$/6 x 38
50033	A4U	$\frac{5}{16}$ x 1$\frac{1}{2}$/8 x 38
50039	A5P	$\frac{3}{8}$ x 1/10 x 25
50045	A5U	$\frac{3}{8}$ x 1$\frac{1}{2}$/10 x 38
50051	A7P	$\frac{1}{2}$ x 1/13 x 25
50057	A7U	$\frac{1}{2}$ x 1$\frac{1}{2}$/13 x 38
50063	A9P	$\frac{5}{8}$ x 1/16 x 25
50075	A10K	$\frac{3}{4}$ x $\frac{3}{4}$/19 x 19
50081	A14P	1 x 1/25 x 25
Cylindrical shapes, radius ends		
50093	B3P	$\frac{1}{4}$ x 1/6 x 25
50111	B5P	$\frac{3}{8}$ x 1/10 x 25
50123	B7P	$\frac{1}{2}$ x 1/13 x 25

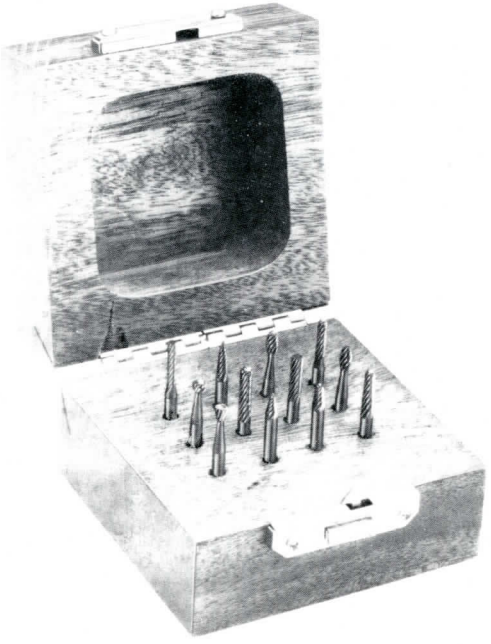
Cat. No. / N/S No.	Ref. No.	Size " x " /mm x mm
Ball shapes		
50159	C3	$\frac{1}{4}$/6
50171	C5	$\frac{3}{8}$/10
50177	C7	$\frac{1}{2}$/13
Tree-shaped, radius ends		
50243	E3K	$\frac{1}{4}$ x $\frac{3}{4}$/6 x 19
50249	E5K	$\frac{3}{8}$ x $\frac{3}{4}$/10 x 19
50255	E7Q	$\frac{1}{2}$ x 1$\frac{1}{8}$/13 x 28
Tree-shaped, pointed ends		
50273	F3G	$\frac{1}{4}$ x $\frac{1}{2}$/6 x 13
50279	F5K	$\frac{3}{8}$ x $\frac{3}{4}$/10 x 19
50291	F7Q	$\frac{1}{2}$ x 1$\frac{1}{2}$/13 x 28
Cone shaped		
50309	G3G	$\frac{1}{4}$ x $\frac{1}{2}$/6 x 13
50321	G3P	$\frac{1}{4}$ x 1/6 x 25
50339	G4P	$\frac{5}{16}$ x 1/8 x 25
50351	G7M	$\frac{1}{2}$ x $\frac{7}{8}$/13 x 22

Ground Burs

Cat. No. / N/S No.	Ref. No.	Size " x " /mm x mm
Cylindrical shape, flat end		
50501	N3P	$\frac{1}{4}$ x 1/6 x 25
50537	N5P	$\frac{3}{8}$ x 1/10 x 25
50561	N7P	$\frac{1}{2}$ x 1/13 x 25
50609	N14P	1 x 1/25 x 25
Cylindrical shape, radius end		
50627	P3P	$\frac{1}{4}$ x 1/6 x 25
50639	P5P	$\frac{3}{8}$ x 1/10 x 25
50651	P7P	$\frac{1}{2}$ x 1/13 x 25
50663	P10R	$\frac{3}{4}$ x 1$\frac{1}{4}$/19 x 32
Ball shaped		
50681	Q3	$\frac{1}{4}$/6
50693	Q5	$\frac{3}{8}$/10
50699	Q7	$\frac{1}{2}$/13

Cat. No. / N/S No.	Ref. No.	Size " x " /mm x mm
Tree shaped, radius end		
50777	S5K	$\frac{3}{8}$ x $\frac{3}{4}$/10 x 19
50783	S7Q	$\frac{1}{2}$ x 1$\frac{1}{8}$/13 x 28
50789	S10P	$\frac{3}{4}$ x 1/19 x 25
Tree shaped, pointed end		
50801	T3G	$\frac{1}{4}$ x $\frac{1}{2}$/6 x 13
50807	T5K	$\frac{3}{8}$ x $\frac{3}{4}$/10 x 19
50819	T7Q	$\frac{1}{2}$ x 1$\frac{1}{8}$/13 x 28
Cone shaped		
50855	U3R	$\frac{1}{4}$ x 1$\frac{1}{4}$/6 x 32
50879	U7M	$\frac{1}{2}$ x $\frac{7}{8}$/13 x 22

Carbiset No. 100 (53543) solid tungsten carbide $\frac{1}{8}$"/3mm shanks



Ref. No.	Qty.	Description
4NBW	1	Cylindrical flat end
4NCW	1	Cylindrical flat end
4PBW	1	Cylindrical radius end
4PCW	1	Cylindrical radius end
4QBW	1	Ball shape
4RBW	1	Oval shape
4SBW	1	Tree shape radius end
4TBW	1	Tree shape pointed end
4T127	1	Tree shape pointed end
4UCW	1	Cone shape
4XBW	1	Flame shape
4ZBW	1	Inverted cone

Rotasets for $\frac{1}{8}$"/3mm shanks

Rotaset for ground burs No. 55 (51115)

Ref. No.	Qty	Description
4T36	1	Tree shape – pointed end
4R3G	1	Oval shape
4Q5	1	Ball shape
4U1H	1	Cone shape
4X3G	1	Frame shape
4N3G	1	Cylindrical shape – flat end
4P1J	1	Cylindrical shape – radius end
4V9A	1	Cylindrical shape – radius end and edge

Rotaset for rotary files No. 66 (51117)

Ref. No.	Qty	Description
4F3G	1	Tree shape – pointed end
4D3G	1	Oval shape
4C5	1	Ball shape
4G1H	1	Cone shape
4G3G	1	Cone shape 25°
4A3G	1	Cylindrical shape – flat end
4B1J	1	Cylindrical shape – radius end
4H9A	1	Cylindrical shape-radius end and edge

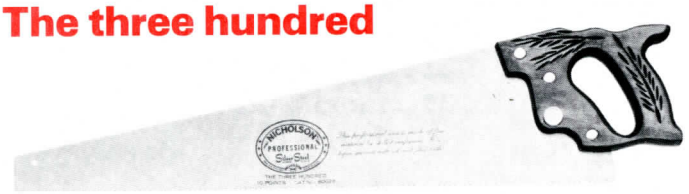
Rotaset for ground burs and rotary files No. 77 (51119)

Ref. No.	Qty	Description
Ground burs		
4T3G	1	Tree shape – pointed end
4R3G	1	Oval shape
4Q5	1	Ball shape
4U1H	1	Cone shape
4X3G	1	Flame shape
4N3G	1	Cylindrical shape – flat end
4P1J	1	Cylindrical shape – radius end
4V9A	1	Cylindrical shape – radius end and edge
4Y5C	1	Flat top ball shape
Rotary files		
4F3G	1	Tree shape – pointed end
4D3G	1	Oval shape
4C5	1	Ball shape
4G1H	1	Cone shape
4G3G	1	Cone shape 25°
4A3G	1	Cylindrical shape – flat end
4B1J	1	Cylindrical shape – radius end
4H9A	1	Cylindrical shape – radius end and edge
4A1J	1	Cylindrical shape – flat end

Nicholson® Hand and Circular Saws

Handsaws

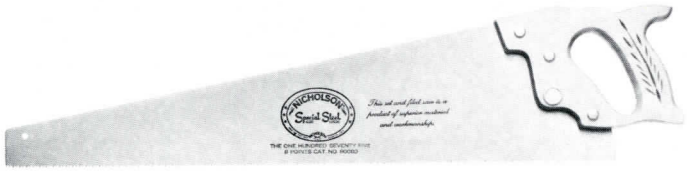
The three hundred



Preferred by craftsmen and experienced carpenters who appreciate high quality tools. The Silver Steel® constructed blade is fully taper ground with set, expertly filed teeth and back. Wood handle is designed for superb comfort and balance.

Cat. No.	N/S No.	←→ "/mm	Crosscut points	Rip points	Width point "/mm	Width butt "/mm	Pack wt. lb/g	Shelf Pack
80013		20/508	10	—	1⅝/41	5½/140	2.63/1193	2
80019		26/660	8	—	1⅝/41	6¼/159	3.88/1760	2
80028		26/660	10	—	1⅝/41	6¼/159	3.88/1760	2
80044		26/660	12	—	1⅝/41	6¼/159	3.88/1760	2
80050		26/660	—	5½	1⅝/41	6¼/159	3.88/1760	2

The one seventy five



A general purpose saw of special steel construction with flat ground blade and ribboned back. Teeth are set and bevel filed. Attractive handle with carved grip has 3 screws and 1 medallion.

Cat. No.	N/S No.	←→ "/mm	Crosscut points	Rip points	Width point "/mm	Width butt "/mm	Pack wt. lb/g	Shelf Pack
80074		20/508	10	—	1⅝/41	5½/140	2.5/1134	2
80080		26/660	8	—	1⅝/41	6¼/159	3.38/1533	2
80086		26/660	10	—	1⅝/41	6¼/159	3.38/1533	2
80092		26/600	—	5½	1⅝/41	6¼/159	3.38/1533	2

The one hundred fifty

A fine quality medium priced handsaw for general cutting. Special steel constructed blade is flat ground; teeth are set and straight filed. Handle is trimmed with 2 screws and 1 medallion.

Cat. No.	N/S No.	←→ "/mm	Crosscut points	Width point "/mm	Width butt "/mm	Pack wt. lb/g	Shelf Pack
80098		20/508	10	1⅝/41	5⅓/140	2.5/1134	2
80104		26/660	8	1⅝/41	6/¼/159	3.38/1533	2

The one hundred

A rugged economy saw with built-in quality. Special steel construction blade is flat ground and set. Handle is trimmed with 3 screws. Ideal for home owner and well suited for all uses.

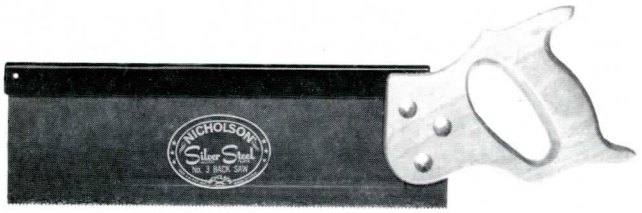
Cat. No.	N/S No.	←→ "/mm	Crosscut points	Width point "/mm	Width butt "/mm	Pack wt. lb/g	Shelf Pack
80115		26/660	8	1⅝/41	6¼/159	9.69/4395	6
80123		26/660	10	1⅝/41	6¼/159	9.69/4395	6

The fifty

Special steel construction blade is flat ground with set teeth. This general purpose saw has a tough polystyrene handle fitted with 3 screws. Handle design utilizes 45° and 90° angles to help in marking the work piece.

Cat. No.	N/S No.	←→ "/mm	Crosscut points	Width point "/mm	Width butt "/mm	Pack wt. lb/g	Shelf Pack
80131		26/660	8	1⅝/41	6¼/159	13.5/6123	10

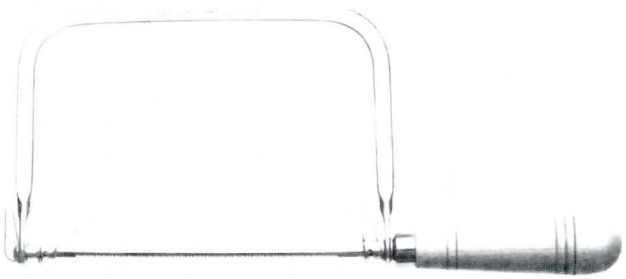
No. 3 Backsaw



A high quality backsaw made of special steel. This saw is a must for every home workshop. Teeth are bevel filed and set. Gun metal blue finish. Fully weather-proofed wood handle has three screw construction.

Cat. No.	N/S No.	⟷ "/mm	Width under back "/mm	Points	Pack wt lb/g	Shelf Pack
80151		12/305	3/76	11	3.31/1503	2
80158		14/355	3½/89	11	4.19/1899	2

No. 50 Coping saw



Popular coping saw for carpenters and home crafstmen. Throat opening permits cuts up to 4½"/114mm in depth. Spring steel rounded edge frame has polished finish and adjustable angle blade. Straight type wood handle.

Cat. No.	N/S No.	⟷ "/mm	Blade length "/mm	Blade width "/mm	Points	Pack wt lb/g	Shelf Pack
80170		12½/317	6½/165	⅛/3.77	15	4.81/2183	10

No. 60 Coping saw

Deep-throated coping saw for cutting sharp angles and curves. Throat opening 6½"/165mm. Spring steel rounded edge frame has polished finish and adjustable angle blade. Straight type wood handle.

Cat. No.	N/S No.	⟷ "/mm	Blade length "/mm	Blade width "/mm	Points	Pack wt lb/g	Shelf Pack
80176		12¾/324	6½/165	⅛/3.17	15	7.00/3175	10

No. 50/60 Coping saw blades

6½"/165mm long, 15 points, pin end. Will fit No. 50 and No. 60 frames.

Cat. No.	N/S No.	"/mm	Blade width "/mm	Points	Pack wt lb/g	Shelf Pack
80182		6½/165	⅛/3.17	15	0.56/255	100

No. 10 Compass saw

For carpenters and craftsmen who want the finest in wood cutting compass saws. Silver Steel® construction. Comfort design wood handle is assembled with stud and wing nut for easy interchange of blades.

Cat. No. /N/S No.	Ref. No.	|←L→| "/mm	Points	Pack lb/g	Shelf Pack
80188	10	12/305	9	3.63/1644	6
80195	10	14/354	9	3.69/1673	6
Blade only					
80201	10	12/305	9	1.75/794	12
80208	10	14/354	9	2.00/907	12

No. 30 Compass saw

A quality saw for home owners. Special high impact polystyrene handle. Blade is tapered to point for cutting sharp curves. Wing nut assembly permits easy blade interchange or reversal.

Cat. No. /N/S No.	Ref. No.	|←L→| "/mm	Points	Pack wt. lb/g	Shelf Pack
80215	30	12/305	9	2.25/1021	6
80221	30	14/354	9	2.5/1134	6
Blade only					
80227	30	12/305	9	1.5/680	12
80233	30	14/354	9	2.0/893	12

No. 6 Keyhole saw

A professional saw designed for intricate close inside work such as keyholes and frets. Silver Steel® blade is tapered to a sharp point and is bevel filed for faster cuts. Blade assembled to wood handle with stud, wing nut and washer.

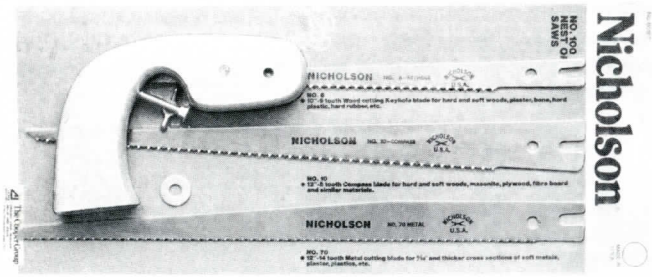
Cat. No. /N/S No.	Ref. No.	|←L→| "/mm	Points	Pack wt. lb/g	Shelf Pack
80239	6	10/254	10	3.19/1446	6
Blade only					
80245	6	10/254	10	0.94/425	12

No. 31 Keyhole saw

Same superior quality blade as the No. 6 but with the patented "aimed contol" pistol grip molded black handle.

Cat. No. /N/S No.	Ref. No.	|←L→| "/mm	Points	Pack wt. lb/g	Shelf Pack
80251	31	10/254	10	2.00/907	6
Blade only					
80245	31	10/254	10	0.94/425	12

No. 100 Nest of saws



This multi-purpose nest of saws comes with three interchangeable saw blades: 12"/305mm compass, 10"/254mm keyhole and a 12"/305mm metal-cutting. Silver Steel® constructed blades are easily interchangeable. Comfort design wood handle is assembled with stud, wing nut and washer.

Contents:

Cat. No.	N/S No.	Ref. No.	Description	←→ "/mm	Points	Pack wt. lb/g	Shelf Pack
80167		100	Nest (complete)	—	—	3.88/1758	4
80245		6	Keyhole blade only	10/254	10	0.94/425	12
80201		10	Compass blade only	12/305	9	1.75/794	12
80168		70	Metal blade only	12/305	15	1.88/850	12
80354		85H	Wood handle	—	—	1.88/850	5

Pruning saws
No. 20 Curved pruner

An excellent general purposes pruner for fast cutting of small limbs. A favorite in citrus groves and vineyards. Silver Steel constructed blade with polished finish. Has convenient hang-up hole. Easy-to-grip knife-type wood handle is trimmed with aluminum screws.

Cat. No.	N/S No.	←→ "/mm	Reverse rip points	Point width "/mm	Butt width "/mm	Pack wt. lb/g	Shelf Pack
80263		14/354	7	$\frac{9}{16}$/14.28	$2\frac{1}{2}$/63	3.19/1446	6

No. 316 Double edge pruner

Lightweight economy pruner with dual-purpose cutting edges. Fine teeth on one edge for light trimming, lightning teeth on other edge for heavier limbs. Special steel construction. Comfort grip wood handle.

Cat. No.	N/S No.	←→ "/mm	Points	Point width "/mm	Butt width "/mm	Pack lb/g	Shelf Pack
80269		16/406	8 (fine edge) 8.73mm/$\frac{11}{32}$ Pitch lightning (2nd edge)	$\frac{29}{32}$/23.01	$2\frac{1}{2}$/63	5.00/2268	6

No. 24 Folding pruner

This safe-design fine tooth pruner features a sure grip wood handle that folds to protect the cutting edge. Perfect for camping and toolbox storage. A must for every gardener.

Cat. No.	N/S No.	←→ "/mm	Cross-cut points "/mm	Point width "/mm	Butt width "/mm	Pack wt. lb/g	Shelf Pack
80275		10/254	$6\frac{1}{2}$/165	$\frac{1}{2}$/12.70	$1\frac{5}{8}$/49	4.50/2041	6

No. 14 Silver flash pruner

The best heavy duty performer of any pruning saw made, this Silver Steel® blade has extra large teeth and gullets for speed cutting of large limbs. Concave cutting edge is precision set and beveled filed and cuts fast on the pull stroke. Blade is flat ground with wood handle, trimmed with aluminum screws. Preferred by utility crews and tree surgeons.

Cat. No. /N/S No.	←→ ″/mm	Point width ″/mm	Butt width ″/mm	Pack wt. lb/g	Shelf Pack
80299	26/660	$1\frac{13}{32}$/36	$3\frac{5}{16}$/84	10/4536	6

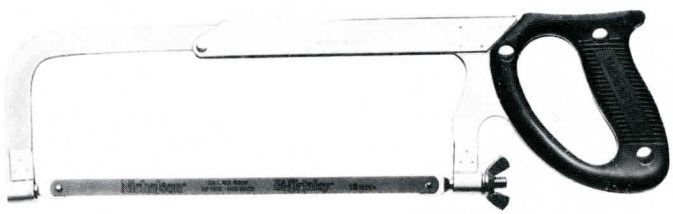
No. 420 Tuttle tooth pruner

Handy all purpose saw for general pruning requirements. Teeth designed for fast cutting of large limbs and firewood. Special steel construction blade has wood handle trimmed with three screws. Ideal for campers.

Cat. No. /N/S No.	←→ ″/mm	Point width ″/mm	But width ″/mm	Pack wt. lb/g	Shelf Pack
80305	20/508	$1\frac{1}{8}$/28.57	$4\frac{7}{8}$/124	7.25/3289	6
80309	24/610	$1\frac{1}{8}$/28.57	$4\frac{7}{8}$/124	10.63/4822	6

Hand hacksaw frames

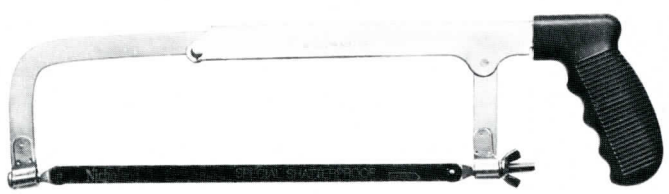
No. 10 Hacksaw frame



Our finest hacksaw frame is corrosion proof, polished nickel with $3\frac{3}{8}$″/86mm throat, adjustable for 10″/254mm or 12″/305mm blades. Molded plastic handle. Blade holding bolts are adjustable to four positions. Rear bolt has wing nut for easy tensioning of blade. Each frame is individually packed and equipped with a 10″/254mm Nicholson® blade.

Cat. No. /N/S No.	Type	Blade ″/mm	Pack wt. lb/g	Shelf Pack
80952	Adjustable	10/254	$1\frac{3}{4}$/794	1

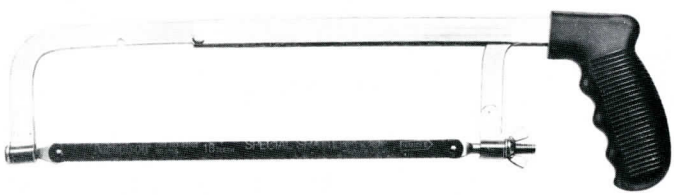
No. 9 Hacksaw frame



Sturdy, bright nickel frame with $3\frac{1}{2}$″/89mm throat. Adjusts for 10″/254mm or 12″/305mm blade in four positions. Molded handle is open pistol grip design. Blade holding bolt is equipped with large wing nut tightner. Assembled with 10″/254mm Nicholson® blade.

Cat. No. /N/S No.	Type	Blade ″/mm	Pack wt. lb., oz/g	Shelf Pack
80958	Adjustable	10/254	6,10½/3005	6

No. 7 Hacksaw frame



Nicholson's economy frame is designed for the hobbyist with only occasional need for a hacksaw. Sturdy, polished nickel frame with $2\frac{3}{4}$″/70mm throat adjusts to 10″/254mm and 12″/305mm blades. Has pistol grip handle of molded plastic.

Cat. No. /N/S No.	Type	Blade ″/mm	Pack wt. lb/kg	Shelf Pack
80964	Adjustable	10/254	9¼/4.20	10

Little-Nic® utility hacksaw

For professionals and home owners. Gets into small places – makes difficult cutting jobs easy. Comes complete with high-quality Nicholson SS1024 hacksaw blade. Uses any flexible hacksaw blade. Overall length 11" /279mm so it fits into any tool box. Blister packed on attractive cards with suggested uses on back.

Cat. /N/S No. /No.	Blade " /mm	Pack wt. lb/g	Shelf Pack
80968	10/254	1 7/8/652	6

Saw accessories

1S Handsaw screw

Nickel-plated steel handsaw screw, oval head with nut.

Cat. /N/S No. /No.	Ref. No.	Pack wt. lb/g	Shelf Pack
80386	1S	0.36/163	12

10SN Handsaw screw

Nickel-plated steel handsaw screw with nut. Nicholson medallion.

Cat. /N/S No. /No.	Ref. No.	Pack wt. lb/g	Shelf Pack
80393	10SN	0.60/272	12

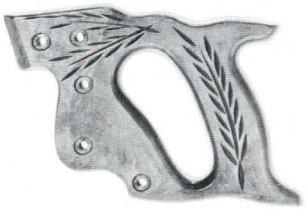
F10A and F9A Hacksaw frame assembly

Front and rear stud with washer and wing nuts.

Cat. /N/S No. /No.	Ref. No.	Assembly For	Shelf Pack
80397	F10A	No. 10 Hacksaw frame	1
80398	F9A	No. 7 & 9 Hacksaw frame	1

Replacement handles

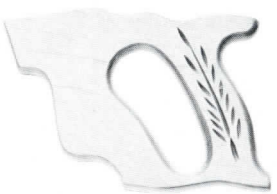
71-H handle



71-H handle is bored, slotted hardwood with apple stain finish. Fits 20" /508mm or 26" /661mm handsaws.

Cat. /N/S No. /No.	Ref. No.	Wt. each lb/g	Shelf Pack
80341	71-H	0.56/225	5

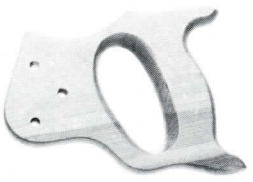
72-H handle



72-H handle is not bored. Slotted hardwood with natural finish. Fits 20" /508mm or 26" /661mm handsaws.

Cat. /N/S No. /No.	Ref. No.	Wt. each lb/g	Shelf Pack
80343	72-H	0.58/262	5

83-H handle



Bored handle. Fits 12" /305mm and 14" /355mm back saws.

Cat. /N/S No. /No.	Ref. No.	lb/g	Shelf Pack
80356	83-H	—	5

85-H handle

Compass/Keyhole saws. Bored. Fits No. 10 and No. 30 compass saw, No. 6 and No. 31 keyhole saw, and No. 100 nest of saws.

Cat. /N/S No. /No.	Ref. No.	lb/g	Shelf Pack
80354	85-H	—	5

Hand hacksaw blades
Bi-Metaloy®– carded

Nicholson®

CAT. NO. 62801
NF 1018 SP HSS EDGE

Lasts twice as long as high speed steel and up to ten times longer than carbon steel. With exceptional combination of tooth hardness and shock resistance these blades can operate 20% to 50% faster resulting in lower costs per cut.

Ref. No.	Type	Carded Cat./N/S No./No.	Boxed Cat./N/S No./No.	Length "/mm	Width "/mm	Gauge "/mm	Teeth Per Inch	Wt. per 100 lb/g
NF(NM)1018	Raker	62801	62635	10/254	½/12.70	.025/0.650	18	3½/1585
NF(NM)1024	Wavy	62807	62659	10/254	½/12.70	.025/0.650	24	3½/1585
NF(NM)1032	Wavy	62813	62683	10/254	½/12.70	.025/0.650	32	3½/1585
NF(NM)1214	Raker	62819	62706	12/304	½/12.70	.025/0.650	14	4¼/1925
NF(NM)1218	Raker	62825	62723	12/304	½/12.70	.025/0.650	18	4¼/1925
NF(NM)1224	Wavy	62831	62749	12/304	½/12.70	.025/0.650	24	4¼/1925
NF(NM)1232	Wavy	62837	62776	12/304	½/12.70	.025/0.650	32	4¼/1925

Carded: 1 blade per card – 10 cards per unit box – 5 unit boxes per carton
Boxed: packaged 100 blades per box.

Bi-Metaloy® Tungsten Silver Steel®

Nicholson®

CAT. NO. 62967
NT 1018 TUNGSTEN

This is definitely not a general use blade. On the contrary, it is premium priced because it is specifically made for cutting the toughest materials with maximum efficiency.
While a relatively small percentage of all cutting jobs require the premium qualities built into the Tungsten blade, those jobs that do fall into that category make its selection advantageous. It is extremely effective on stainless steels, high manganese steels and certain bronzes.
When the work calls for this blade, it is a profitable investment in production efficiency. Blades are produced to exacting specifications and inspected to insure high quality.

Ref. No.	Type	Boxed Cat. & N/S No.	Length "/mm	Width "/mm	Gauge "/mm	Teeth per Inch	Wt. per 100 in lb/g
NT1018	Raker	62967	10/254	½/12.70	.025/.65	18	3½/1585
NT1024	Wavy	62982	10/254	½/12.70	.025/.65	14	3½/1585
NT1032	Wavy	62997	10/254	½/12.70	.025/.65	32	3½/1585
NT1214	Raker	63012	12/304	½/12.70	.025/.65	14	4¼/1925
NT1218	Raker	63027	12/304	½/12.70	.025/.65	18	4¼/1925
NT1224	Wavy	63042	12/304	½/12.70	.025/.65	24	4¼/1925
NT1232	Wavy	63058	12/304	½/12.70	.025/.65	32	4¼/1925

Packaged 100 blades per box.

Special shatterproof standard flexible – for thin stock

Specially hardened to induce toughness. Because of this extreme toughness, one tooth coarseness greater than that normally recommended can be used. Thus the cutting speed on thin stocks can be increased. Note, however, that this blade is not recommended for higher carbon or alloyed steels.

NICHOLSON

Ref. No.	Type	Carded Cat./N/S No./No.	Boxed Cat./N/S No./No.	Length "/mm	Width "/mm	Gauge "/mm	Teeth Per Inch	Wt. per 100 lb/kg
SS1018	Raker	63208	63103	10/254	½/12.70	.025/.65	18	3½/1585
SS1024	Wavy	63220	63112	10/254	½/12.70	.025/.65	24	3½/1585
SS1032	Wavy	63232	63124	10/254	½/12.70	.025/.65	32	3½/1585
SS1214	Raker	63244	63136	12/304	½/12.70	.025/.65	14	4/1812
SS1218	Raker	63256	63145	12/304	½/12.70	.025/.65	18	4/1812
SS1224	Wavy	63268	63158	12/304	½/12.70	.025/.65	24	4/1812
SS1232	Wavy	63280	63171	12/304	½/12.70	.025/.65	32	4/1812

Packaged 100 blades per box.

Sabre saw blades

No. 1

No. 2

No. 3

No. 4

No. 5

No. 6

No. 7

No. 8

No. 9

No. 10

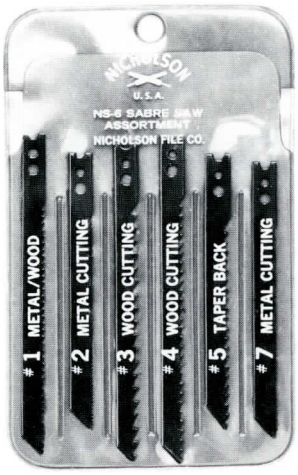
The complete line of Nicholson® flame hardened steel blades resists breakage, gives longer life and assures clean and accurate cutting. Blades are available for cutting woods, metals, laminates and wallboard in coarse, medium and fine tooth styles. Universal ¼"/6 mm shanks fit all popular makes of sabre saws. Ideal for home and professional use.

Ref. No.	Cat./N/S No./No.	Blade Type	Card wt. oz/g	Blades Per card
1	81036	Metal/wood 3½" /89mm long 14 T.P.I.	6/170	2
2	81043	Metal Cutting 3" /76mm long 24 T.P.I.	4/113	2
3	81050	Wood Cutting 3½" /89mm long 7 T.P.I.	6/170	2
4	81057	Wood Cutting 3½" /89mm long 10 T.P.I.	6/170	2
5	81064	Taper Back 3" /76mm long 10 T.P.I.	4/113	2
6	81071	Scroll Sawing 3" /76mm long 10 T.P.I.	4/113	2
7	81078	Metal Cutting 3" /76mm long 32 T.P.I.	4/113	2
8	81085	Wood Cutting 6" /152mm long 7 T.P.I.	8/227	1
9	81091	Knife Blade 3" /76mm long	4/113	2
10	81094	Flush Cutting 3½" /89mm long 7 T.P.I.	8/227	1

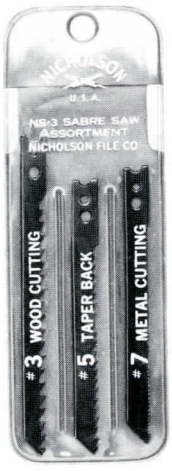
Skin packed on cards. 10 cards per box. Approximate weight ½lb/226g/carton.

Sabre saw blade assortment

NS-6



NS-3



Ideal popular sabre saw blade units packed in a convenient plastic pouch. A saw blade for every cutting need from rough wood and laminates to tubing, conduit and fine gauge metal. Universal $\frac{1}{4}$" /6.35mm shank to fit all popular sabre saws. See table on previous page for blade number description.

Cat. No. / N/S No.	Ref. No.	Contents	Wt. each lb/g	Shelf Pack
81103	NS-6	1, 2, 3, 4, 5, 7	1/452	10
81106	NS-3	3, 5, 7	$\frac{1}{2}$/226	10

Hacksaw comparison chart

	Hand Hacksaw Blades			
Manufacturers	Bi-Metaloy®	All Hard Mo.	All Hard Tungsten	Standard Steel Flexible
Nicholson®	**Flex Mo.**	**All Hard Mo.**	**All Hard Tung.**	**Flex Standard**
American Saw (Lenox)	Hackmaster	Mo-Speed	—	Standard
Armstrong-Blum (Marvel)	Exempler	—	—	Carbon 60
Stanscrew/Capewell (Capewell)	Safe Tech	Technite	Tungsten	Flex-Tung
Clemson Bros. (Star)	Molyflex	Moly	Tungsten	—
Diamond Saw (Sterling)	Super Sterling	—	—	Flexible
Disston, Inc.	Super Safe Tungsten	Di-Mol	Tungsten	Dura-Flex
DoAll	Safety	Molybdenum	18% Tungsten	Flexible
Ladish Company	Moly Flexible	Moly Hard	Tungsten	Flexible
Millers Falls	Blu-Flex	Blu-Mol	High Speed (18-4-1)	Tuf Flex
Simonds Cutting Tools	H.S.S. Shatter Proof	—	—	Standard
Spartan Saw Works	Saf-T-Saw	Kutall		Flexible
L. S. Starrett Company	Green-Stripe Safe-Flex	Red-Stripe S-M High Spd	Blue-Stripe	Grey-Flex
H. G. Thompson (Milford)	Flex. Rezistor	All Hard Rezistor	—	Flexible
Victor Saw Works	Molyflex	Moly	Tungsten	—

	Power Hacksaw Blades		
Manufacturers	High Speed Molybdenum	High Speed Tungsten	High Speed Weld-Edge
Nicholson	***All Hard Mo.**	**All Hard**	**Weld Edge Shatterproof**
American Saw (Lenox)	—	—	Hackmaster
Armstrong-Blum (Marvel)	—	—	High Spd Edge
Standscrew/Capewell (Capewell)	Technite	—	Safe Tech
Clemson Bros. (Star)	Star Moly	Tungsten	Molyflex
Diamond Saw (Sterling)	Molybdenum	Tungsten	Welded Edge
Disston, Inc.	Di-Mol	Tungsten	Super Safe Di-Cro-Cut
DoAll	Molybdenum	18% Tungsten	Safety
Ladish Company	All Hard	Tungsten	Welded Edge
Millers Falls	Blu-Mol	—	Jet-Edge
Simonds Cutting Tools	Molybdenum	Tungsten	Weld-Edge
Spartan Saw Works	Kutall	—	Saf-T-Saw
L. S. Starrett Company	Red-Stripe	Blue-Stripe	Safe-Flex
H. G. Thompson (Milford)	All Hard Rezistor	—	Weld-Edge
Victor Saw Works	Moly	Tungsten	Molyflex

* Also available in flexible high speed (molybdenum).

Hand hacksaw blades Care and servicing

Blade breakage
1. Lack of tension. Tighten until taut.
2. Too much tension. Loosen slightly.
3. Cutting in awkward position. Use flexible type blades.
4. Jamming in cut. Hold work securely – stock should fall free after cut. In soft material teeth may be binding because they are too fine.

Pinhole breakage
1. Too much tension. Loosen slightly.
2. Worn pins causing pressure on eyeholes. Replace pins.

Rounded teeth – premature wear
1. Blade not cutting. Use slower stroke and apply heavier feed.
2. Dragging on return stroke. Lift saw.
3. Material too hard. Select proper blade.

Crooked cutting
1. Too much pressure. Reduce feed.
2. Blade out of alignment. Check frame and blade tension.
3. Blade worn out. Replace.

Tooth breakage
1. Teeth too coarse. Keep 3 in the work.
2. Too much feed, teeth loading. Ease feed pressure.
3. Teeth too fine, clogging. Change to coarser tooth.
4. Starting cut on sharp corner. Reposition work.

General tooth recommendations
14 Tooth: For cutting stock 1"/125.40mm or over in cross section. For soft materials where maximum chip clearance is needed.
18 Tooth: For general shop use, when same blade is used on several jobs.
24 Tooth: For cross section $\frac{1}{16}$"/1.58mm – $\frac{1}{4}$"/6.35mm such as pipe, angles, small drill rod.
32 Tooth: To cut stock up to $\frac{1}{16}$"/1.58mm such as light tubing, sheet metal, BX.
At least two teeth should be in contact with the work at all times.

Choose the right number of teeth per inch
The sketches below (figure 1) show how coarseness of teeth affects blade efficiency. See maximum speeds recommended at right. Speed varies according to material being cut and saw blade coarseness.

Starting the cut
If possible, avoid starting cut on a sharp corner. When unavoidable, begin with light pressure and use a steady forward stroke. As many teeth as possible should be in contact with the cutting area and at least two teeth must be engaged. Note cutting angles shown below.

Fig. 1

Right Wrong

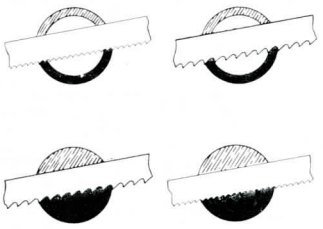
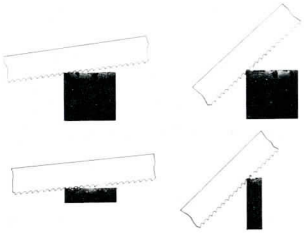


Fig. 2

Right Wrong



Solutions to hacksaw blades problems

Blade breakage
1. Dropping blade on work. Feed blade into work slowly.
2. Loose blade. Follow tension recommendations.
3. Excessive feed. Reduce pressure.
4. New blades used in old cut. Reverse stock.
5. Blade binds at end of cut. Allow loose piece to fall away.

Pinhole breakage
1. Dirty mounting plates. Clean blade and holder to obtain snug fit.
2. Too much tension. Reduce blade tension.
3. Worn mounting plates and pins. Replace parts.

Stripped teeth
1. Clogging. Too many teeth per inch; change to coarser tooth.
2. Shock. Teeth too coarse; change to finer tooth blade.
3. Blade entering work at a sharp edge. Reposition work to insure keeping three teeth in work.
4. Excessive feed pressure. Reduce pressure.
5. Material unstable, not properly clamped. Secure properly.

Premature tooth wear
1. Blade reversed in saw. Teeth should be in same direction as cutting stroke.
2. Wrong blade for the job. Refer to tooth selector chart on page 82 and blade descriptions on pages 82, 83 and 84.
3. No cutting lubricant. Use lubricant on all materials except paper and cast iron.
4. Blade drags on return stroke. Make sure blade lifts for return stroke.
5. Too much heat generated by excessive speed. Reduce speed.
6. Excessive feed pressure. Moderate pressure produces longer tooth life.
7. Teeth just rubbing material. Due to insufficient feed. Increase feed.

Crooked cutting
1. Worn blade. Replace.
2. Loose blade. Check for correct tension.
3. Excessive pressure. Use correct rate of feed.
4. Material unstable. Clamp stock securely.
5. Frame out of alignment. Check and adjust machine.
6. Hard spots in material. Reverse stock and start new cut.

Nicholson® hand hacksaw tooth selector

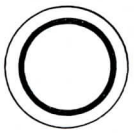
Material	Teeth	Strokes Per Minute
Ferrous		
*BX	32	60
*Conduit, Rigid	24	60
Drill Rod	18-24	40
Iron, Cast	14	60
*Pipe	24	60
Rails	14	40
*Sheet Metal	24-32	60
Steel, Machinery	14-18	60
Steel, Tool	18-24	50
Structural Shapes, Heavy	18	60
Structural Shapes, Light	24	60
*Tubing, Light	32	60
Non-Ferrous		
Aluminum	14	60
Brass and Bronze	14-24	60
*Brass Tubing	24	60
Copper	14	60
Structural Shapes	14-24	60
Non-Metals		
Asbestos	14	60
Fiber	14	60
Slate	14	50

*Special shatterproof blades of coarser teeth than specified may be used with excellent results on thin sections. See page 61.

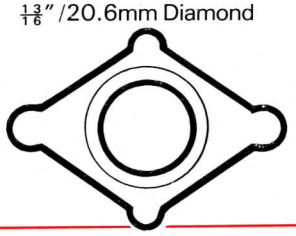
Magicut® circular saw blades

Made of the finest alloy chrome nickel molybdenum steel. Precision ground to exacting standards. Blades stay sharper longer and resist rust. Cut smoother with less friction than ordinary steel blades. Blades can be reset and filed. Teeth individually set and sharpened. Precision arbor fit. Fits all popular saws with $\frac{5}{8}$", $\frac{1}{2}$" or diamond arbors. Sold in full box quantities only.

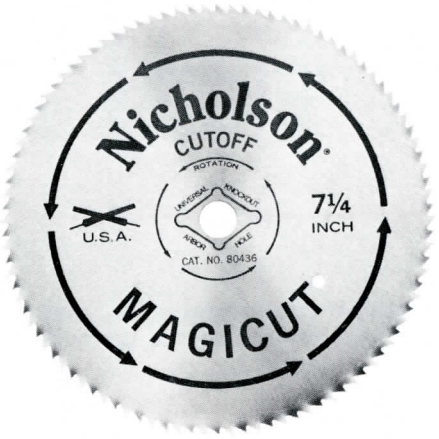
ROUND
$\frac{5}{8}$"/15.87mm to $\frac{1}{2}$"/12.70mm
$\frac{3}{4}$"/19mm to $\frac{5}{8}$"/16mm
1"/25.4mm to $\frac{3}{4}$"/19mm



UNIVERSAL
$\frac{5}{8}$"/16mm to $\frac{1}{2}$"/12.7mm
$\frac{13}{16}$"/20.6mm Diamond



Cut off (flat ground)



Ideal for fast smooth cutting across the grains of hard or soft wood, sheeting, flooring and wood molding. Easily resharpened.

Cat. /N/S No. /No.	Blade dia. "/mm	Arbor hole "/mm x "/mm	Teeth	Pack wt. lb/g	Shelf Pack
80406	6/152	Universal	100	5.38/2437	10
80415	6½/165	Universal	100	6.38/2890	10
80425	7/178	Universal	100	7.69/3483	10
80436	7¼/184	Universal	100	8.13/3682	10
80446	8/203	Universal	100	10.94/4955	10
80453	9/228	$\frac{5}{8}$/15.87 x $\frac{1}{2}$/12.70 round	100	6.13/2776	5
80456	10/254	$\frac{3}{4}$/19.05 x $\frac{5}{8}$/15.87 round	100	8.94/4049	5
80463	12/305	1/25.40 x $\frac{3}{4}$/19.05 round	100	2.88/1304	1

Rip (flat ground)

For cutting hard and soft woods with the grain. Teeth set for clearance. Easily resharpened.

Cat. /N/S No. /No.	Blade dia. "/mm	Arbor hole "/mm x "/mm	Teeth	Pack wt. lb/g	Shelf Pack
80470	6/152	Universal	36	5.38/2437	10
80479	6½/165	Universal	36	6.38/2890	10
80488	7/178	Universal	36	7.69/3483	10
80497	7¼/184	Universal	36	8.13/3682	10
80506	8/203	Universal	36	10.94/4955	10
80512	9/228	$\frac{5}{8}$/15.87 x $\frac{1}{2}$/12.70 round	36	6.13/2776	5
80515	10/254	$\frac{3}{4}$/19.05 x $\frac{5}{8}$/15.87 round	36	8.94/4049	5
80522	12/305	1/25.40 x $\frac{3}{4}$/19.05 round	36	2.88/1304	1

All purpose combination (flat ground)

Designed for smooth cutting in any direction through all types of wood. Easily resharpened.

Cat. /N/S No. /No.	Blade dia. "/mm	Arbor hole "/mm x "/mm	Teeth	Pack wt. lb/g	Shelf Pack
80529	6/152	Universal	40	5.38/2437	10
80538	6½/165	Universal	44	6.38/2890	10
80547	7/178	Universal	44	7.69/3483	10
80557	7¼/184	Universal	44	8.13/3682	10
80566	8/203	Universal	44	10.94/4955	10
80575	9/228	$\frac{5}{8}$/15.87 x $\frac{1}{2}$/12.70 round	44	6.13/2776	5
80583	10/254	$\frac{3}{4}$/19.05 x $\frac{5}{8}$/15.87 round	44	8.94/4049	5
80591	12/305	1/25.40 x $\frac{3}{4}$/19.05 round	48	2.88/1304	1

Chisel tooth combination (flat ground)

For fast rugged general purpose cutting. Rips, crosscuts, miters hard and soft wood, wallboard, and heavy construction gauge plywood. Easily resharpened.

Cat. No. / N/S No.	Blade dia. " /mm	Arbor hole " /mm x " /mm	Teeth	Pack wt. lb/g	Shelf Pack
80595	5½/139	12.70/½ round	20	5.00/2267	10
80598	6/152	Universal	20	5.38/2437	10
80607	6½/165	Universal	20	6.38/2890	10
80616	7/178	Universal	24	7.69/3483	10
80626	7¼/184	Universal	24	8.13/3682	10
80636	8/203	Universal	30	10.94/4955	10
80642	9/228	⅝/15.87 x ½/12.70 round	30	6.13/2776	5
80646	10/254	¾/19.05 x ⅝/15.87 round	36	8.94/4049	5
80653	12/305	1/25.40 x ¾/19.05 round	40	2.88/1304	1

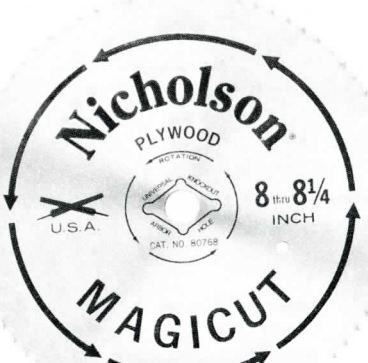
Planer combination (flat ground)

Economical blade for smooth cross cutting, ripping and mitering. Fast cutting teeth are set for clearance. Can be resharpened.

Cat. No. / N/S No.	Blade dia. " /mm	Arbor hole " /mm x " /mm	Teeth	Pack wt. lb/g	Shelf Pack
80660	6/152	Universal	10 st.	5.38/2437	10
80669	6½/165	Universal	10 st.	6.38/2890	10
80678	7/178	Universal	12 st.	7.69/3483	10
80687	7¼/184	Universal	12 st.	8.13/3682	10
80696	8/203	Universal	14 st.	10.94/4955	10
80705	9/228	⅝/15.87 x ½/12.70 round	16 st.	6.13/2776	5
80714	10/254	¾/19.05 x ⅝/15.87 round	16 st.	8.94/4049	5
80722	12/305	1/25.40 x ¾/19.05 round	18 st.	2.88/1304	1

st. = sections

Plywood (flat ground)



Smooth, economical cutting of paneling, plywood and laminates. Also used where occasional nails are found, such as old flooring. Easily resharpened.

Cat. No. / N/S No.	Blade dia. " /mm	Arbor hole " /mm x " /mm	Teeth	Pack wt. lb/g	Shelf Pack
80727	5½/139	½/12.70 round	120	5.00/2267	10
80729	6/152	Universal	150	5.38/2437	10
80738	6½/165	Universal	150	6.38/2890	10
80748	7/178	Universal	150	7.69/3483	10
80758	7¼/184	Universal	150	8.13/3682	10
80768	8/203	Universal	150	10.94/4955	10
80775	9/228	⅝/15.87 x ½/12.70 round	168	6.13/2776	5
80778	10/254	¾/19.05 x ⅝/15.87 round	190	8.94/4049	5

Hollow ground planer combination

Premium blade offers fast, smooth crosscutting, ripping and mitering. Fast cutting teeth, hollow ground for clearance. Excellent blade for all furniture and cabinet work where exceptionally smooth cutting is required. Can be resharpened.

Cat. No.	N/S No.	Blade dia. "/mm	Arbor hole "/mm x "/mm	Teeth	Pack wt. lb/g	Shelf Pack
80786		6½/165	⅝/15.87 x ½/12.70 round	10 st.	4.88/2210	10
80796		7/178	⅝/15.87 x ½/12.70 round	12 st.	6.06/2745	10
80802		7-7⅛/178-184	Diamond	12 st.	6.56/2971	10
80806		7¼/184	⅝/15.87 x ½/12.70 round	12 st.	6.56/2971	10
80816		8/203	⅝/15.87 x ½/12.70 round	14 st.	8.00/3628	10
80823		9/228	⅝/15.87 x ½/12.70 round	16 st.	5.19/2351	5
80826		10/254	¾/19.05 x ⅝/15.87 round	16 st.	7.50/3397	5

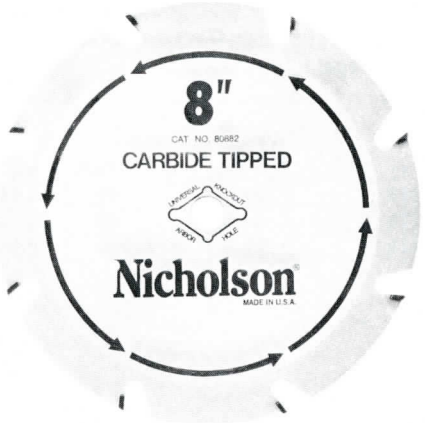
st. = sections

Hollow ground plywood

A premium blade hollow ground for clearance designed for virtually splinter free cutting of plywood, paneling, and laminated woods. Easily resharpened.

Cat. No.	N/S No.	Blade dia. "/mm	Arbor hole "/mm x "/mm	Teeth	Pack wt. lb/g	Shelf Pack
80833		6½/165	⅝/15.87 x ½/12.70 round	150	4.88/2210	10
80841		7/178	⅝/15.87 x ½/12.70 round	150	6.06/2745	10
80843		7-7⅛/178-184	Diamond	150	6.56/2971	10
80848		7¼/184	⅝/15.87 x ½/12.70 round	150	6.56/2971	10
80856		8/203	⅝/15.87 x ½/12.70 round	150	8.00/3628	10
80860		9/228	⅝/15.87 x ½/12.70 round	168	5.19/2351	5
80864		10/254	¾/19.05 x ⅝/15.87 round	190	7.50/3397	5

Carbide tipped



Long lasting premium blade for fast rugged general purpose cutting of woods, wallboard, and heavy construction gauge plywood. Longer lasting than conventional blades.

Cat. No.	N/S No.	Blade dia. "/mm	Arbor hole "/mm x "/mm	Teeth	Pack wt. lb/g	Shelf Pack
80870		6½/165	Universal	8	4.94/2237	5
80876		7-7⅛/178-184	Universal	8	5.86/2663	5
80882		8/203	Universal	8	6.75/3057	5

Carbide tipped multi-tooth

Stays sharper, cuts faster, lasts longer than conventional blades. Cuts almost any material smoothly – without binding.

Cat. /N/S No. /No.	Blade dia. " /mm	Arbor hole " /mm x " /mm	Teeth	Pack wt. lb/g	Shelf Pack
80894	6½/165	Universal	20	3.25/1472	5
80901	7/178	Universal	24	3.75/1698	5
80904	7-7¼/184	Universal	24	4.00/1814	3
80908	8/203	Universal	30	5.00/2265	3
80912	9/228	⅝/15.87 x ½/12.70 round	30	6.75/3057	2
80914	10/254	⅝/15.87 x ½/12.70 round	36	8.00/3624	2

Carbide tipped blade – 40 tooth

Finer cuts at a faster production. More cuts in less time without sacrificing a smooth cut finish. Packaged in reusable blade saver pack for safe storage.

Cat. /N/S No. /No.	Blade dia. " /mm	Arbor hole " /mm x " /mm	Teeth	Pack wt. lb/g	Shelf Pack
80812	6½/165	Universal	40	2.88/1304	3
80813	7-7¼/178-184	Universal	40	3.10/1389	3
80822	8/203	Universal	40	4.43/2013	3
80830	9/228	Universal	40	5.12/2325	2
80831	10/254	Universal	40	6.75/3062	2

Carbide tipped blade – 60 tooth

Faster cuts at a faster production. More cuts in less time without sacrificing a smooth cut finish. Packaged in reusable blade saver pack for safe storage.

Cat. /N/S No. /No.	Blade dia. " /mm	Arbor hole " /mm x " /mm	Teeth	Pack wt. lb/g	Shelf Pack
80836	8/208	Universal	60	4.44/2012	3
80837	9/228	Universal	60	5.12/2325	2
80838	10/254	Universal	60	6.75/3062	2

Circular saw blades bulk packaged

Description	Cat. /N/S No. /No.	Blade diameter " /mm	Arbor hole	Teeth	Shelf Pack
All purpose combination	80545	6½/165	Universal	44	50
Plywood	80736	6½/165	Universal	150	50
All purpose combination	80553	7¼/184	Universal	44	50
Plywood	80755	7¼/184	Universal	150	50

Circular saw blades with millimeter arbor holes – for export only

These blades are manufactured to U.S.A. standards, except that the arbor (center) hole on all blades has a 25mm center hole punched with bushings provided to reduce hole sizes to 20mm and 15mm. These blades are skin packed on our standard cards with labels indicating the center hole sizes.

Cut off (flat ground)

Ideal for flat smooth cutting across the grains of hard or soft wood, sheeting, flooring and wood molding. Easily resharpened.

Cat./N/S No./No.	Blade diameter "/mm	Arbor hole mm x mm x mm	Teeth	Pack wt. lb/g	Shelf Pack
80406	6/152	25 x 20 x 15	100	5.38/2437	10
80425	7/178	25 x 20 x 15	100	7.69/3483	10
80446	8/203	25 x 20 x 15	100	10.94/4955	10
80453	9/228	25 x 20 x 15	100	6.13/2775	5
80456	10/254	25 x 20 x 15	100	8.94/4049	5

Rip (flat ground)

For cutting hard and soft woods with the grain. Teeth set for clearance. Easily resharpened.

Cat./N/S No./No.	Blade diameter "/mm	Arbor hole mm x mm x mm	Teeth	Pack wt. lb/g	Shelf Pack
80470	6/152	25 x 20 x 15	36	5.38/2437	10
80488	7/178	25 x 20 x 15	36	7.69/3483	10
80506	8/203	25 x 20 x 15	36	10.94/4955	10
80512	9/228	25 x 20 x 15	36	6.13/2776	5
80515	10/254	25 x 20 x 15	36	8.94/4049	5

All purpose combination (flat ground)

A blade for all general purpose work. Smooth cutting in any direction through all types of wood. Easily resharpened.

Cat./N/S No./No.	Blade diameter "/mm	Arbor hole mm x mm x mm	Teeth	Pack wt. lb/g	Shelf Pack
80529	6/152	25 x 20 x 15	40	5.38/2437	10
80566	8/203	25 x 20 x 15	44	10.94/4955	10
80575	9/228	25 x 20 x 15	44	6.13/2776	5
80583	10/254	25 x 20 x 15	44	8.94/4049	5

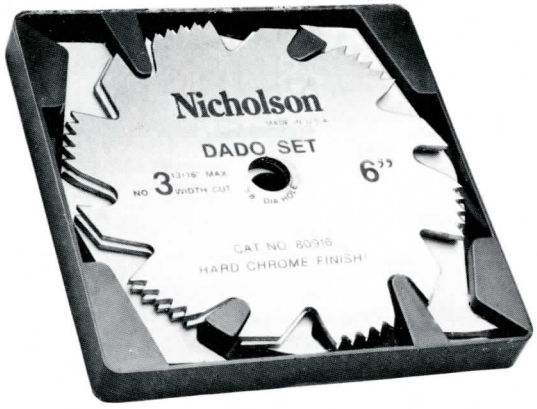
Planer combination (flat ground)

Economical blade for smooth crosscutting, ripping and mitering. Fast cutting teeth are set for clearance. Can be resharpened.

Cat./N/S No./No.	Blade diameter "/mm	Arbor hole mm x mm x mm	Teeth	Pack wt. lb/g	Shelf Pack
80660	6/152	25 x 20 x 15	10 st	5.38/2437	10
80678	7/187	25 x 20 x 15	12 st	7.69/3483	10
80696	8/203	25 x 20 x 15	14 st	10.94/4955	10
80714	10/254	25 x 20 x 15	16 st	8.94/4049	5

st = section

Dado set



This Dado set offers optional groove requirements up to and including $1\frac{3}{16}$"/20.63mm to fit virtually all home craftsman and shop requirements. It should not be confused with lower priced "Dados" capable only of three different widths of cut. Nicholson® Dado set cut grooves in one quick, easy operation—in any direction. Seven cutter blades easily interchanged. Width of cut varies from $\frac{1}{8}$"/3.17mm to $1\frac{3}{16}$"/20.63mm. Made of high quality steel, ground and matched to insure smooth, clean grooves. Hard-chromed finish provides excellent rust resistance. For bench, radial arm, and swing saws. Set includes two outside cutters $\frac{1}{8}$"/3,17 gauge, one inside cutter $\frac{1}{16}$"/1.58mm gauge and four inside cutters $\frac{1}{8}$"/3.17mm gauge.

Cat. No.	Blade diameter "/mm	Hole diameter "/mm	Pack wt. lb/g	Shelf Pack
80916	6/152	$\frac{5}{8}$/15.87	2.62/1191	1
80922	8/203	$\frac{5}{8}$/15.87	5.37/2438	1

Circular saw blade bushings

Cat./N/S No./No.	Ref. No.	Description "/mm x "/mm	Shelf Pack
80928	1	$\frac{5}{8}$/15.87 x $\frac{1}{2}$/12.70	10
80934	3	$\frac{3}{4}$/19.05 x $\frac{5}{8}$/15.87	10
80940	6	1/25.40 x $\frac{3}{4}$/19.05	10
80946	11	Diamond x $\frac{1}{2}$/12.70 round hole	10
80949	12	Diamond x $\frac{5}{8}$/15.87 round hole	10

Circular saw blade kits

Trio kit

An attractive combination package aimed directly at the home handyman. One convenient purchase provides him with three blades that will be all he needs to tackle the most involved home improvement projects.
The handy fold-up package stores the extra blades and features a quick reference chart indicating which blade is best for a particular task.

Cat. /N/S No. /No.	Blade Size "/mm	Contents	Pack wt. lb/kg	Shelf Pack
80920	6½/165	Rip, All-purpose & Plywood	8½/3.8	5
80921	7¼/184	Rip, All-purpose & Plywood	11¼/5.1	5

Duo-Pack

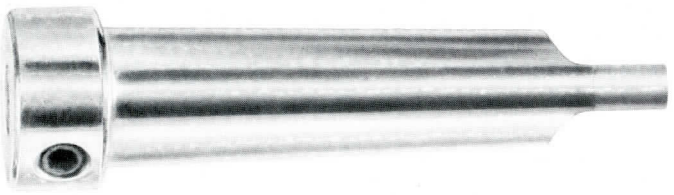
The self-storing Nicholson® Duo-Pack holds a plywood blade used for making fast, splinter-free cuts through paneling, plywood and laminates and a planer combination blade to make quick work of cross cutting, ripping and mitering. Blades are protected in the sturdy, easy to store package which also provides a blade selection reference chart.

Cat. /N/S No. /No.	Blade Size "/mm	Contents	Pack wt. lb/g	Shelf Pack
80924	6½/165	Plywood & Planer combination	7⅛/3.25	5
80925	7¼/184	Plywood & Planer combination	9$\frac{1}{16}$/4.14	5

Mandrels with high speed ¼"/6.35mm pilot drills

Cat. /N/S No. /No.	Ref. No.	Shank "/mm	Fitting saws nos.	Follows through
81317	M401H	¼/6.35 round	H109-H119	H112-H119
81323	M402H	$\frac{7}{16}$/11.11 hex	H109-H119	H12-H119
81335	M404HF	$\frac{7}{16}$/11.11 hex	H120-H196	H124-H196
81344	M405HF	⅝/15.87 hex	H120-H196	H124-H196
81416	E451	$\frac{7}{16}$/11.11 hex	Extension 12"/304mm	
81428	P441	¼"/6.35mm hex pilot drill for mandrels		

Morse taper mandrel adaptors



Fit the regular hex shank mandrels listed above, so they can be driven in Morse Taper Socket.

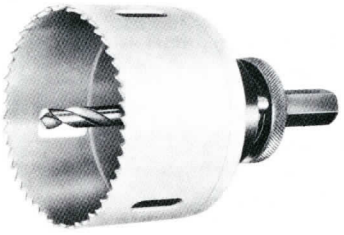
Cat. /N/S No. /No.	Ref. No.	Shank (inch)	Fits Mandrel shanks "/mm
81419	A431	2T	$\frac{7}{16}$/11.11 hex
81422	A432	3T	$\frac{7}{16}$/11.11 hex
81425	A433	3T	⅝/15.87 hex

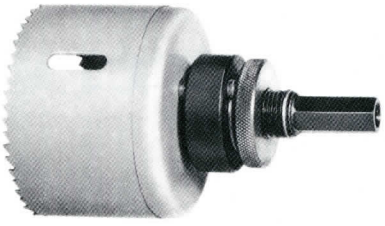
Hole saws

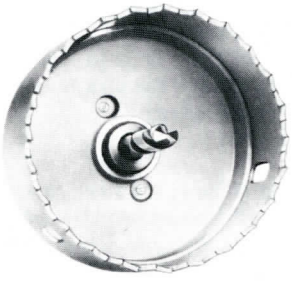
Nicholson® High Speed Steel Welded Edge Shatterproof

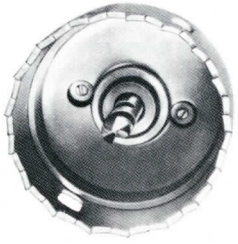
Nicholson engineers have designed and produced a first quality line of hole saws for fast, clean cuts in tough and mild steels, cast iron, aluminum, brass and bronze, plastics, iron or steel pipe and wood. These hole saws are rugged, high speed gang-cutting tools, capable of cutting holes from $\frac{9}{16}$"/14mm to 6"/152mm in diameter and up to $1\frac{1}{8}$"/28mm deep. The saw follows completely through its own hole.

There are six teeth per inch to the cutting edge, which is made of a specially selected high speed steel, welded to an extremely tough alloy steel back. This, in turn, is welded to the steel body.









6 teeth per inch — Cutting depth $1\frac{1}{8}$"/28mm

Cat. No./N/S No.	Ref. No.	Diameter saw "/mm	Pipe sizes Tap "/mm	Pipe sizes Entrance "/mm	Speed (RPM) Mild Steel	Speed (RPM) Cast Iron
81152	H109	$\frac{9}{16}$/14.28	—	—	530	400
81155	H110	$\frac{5}{8}$/15.87	—	—	550	365
81158	H111	$\frac{11}{16}$/17.46	—	—	500	330
81161	H112	$\frac{3}{4}$/19.05	—	$\frac{3}{8}$/9.52	460	300
81164	H113	$\frac{13}{16}$/20.63	—	—	425	280
81167	H114	$\frac{7}{8}$/22.22	$\frac{3}{4}$/19.05	$\frac{1}{2}$/12.70	390	260
81170	H115	$\frac{15}{16}$/23.81	—	—	370	245
81173	H116	1/25.40	—	—	350	235
81176	H117	$1\frac{1}{16}$/26.98	—	—	325	215
81179	H118	$1\frac{1}{8}$/28.57	1/25.40	$\frac{3}{4}$/19.05	300	200
81182	H119	$1\frac{3}{16}$/30.16	—	—	285	190
81188	H120	$1\frac{1}{4}$/31.75	—	—	275	180
81191	H121	$1\frac{5}{16}$/33.33	—	—	260	175
81197	H122	$1\frac{3}{8}$/34.92	—	1/25.40	250	165
81200	H123	$1\frac{7}{16}$/36.51	—	—	240	160
81206	H124	$1\frac{1}{2}$/38.10	$1\frac{1}{4}$/31.75	—	230	150
81209	H125	$1\frac{9}{16}$/39.68	—	—	220	145
81212	H126	$1\frac{5}{8}$/41.27	—	—	210	140
81215	H127	$1\frac{11}{16}$/42.86	—	—	205	135
81218	H128	$1\frac{3}{4}$/44.45	$1\frac{1}{2}$/38.10	$1\frac{1}{4}$/31.75	195	130
81224	H130	$1\frac{7}{8}$/47.62	—	—	180	120
81227	H132	2/50.80	—	$1\frac{1}{2}$/38.10	170	115
81230	H133	$2\frac{1}{16}$/52.38	—	—	165	110
81233	H134	$2\frac{1}{8}$/53.97	—	—	160	105
81236	H136	$2\frac{1}{4}$/57.15	2/50.80	—	150	100
81239	H137	$2\frac{5}{16}$/58.73	—	—	145	100
81242	H138	$2\frac{3}{8}$/60.32	—	—	140	95
81245	H140	$2\frac{1}{2}$/63.50	—	2/50.80	135	90
81248	H141	$2\frac{9}{16}$/65.08	—	—	130	85
81251	H142	$2\frac{5}{8}$/66.67	—	—	130	85
81254	H144	$2\frac{3}{4}$/69.85	—	—	125	80
81257	H146	$2\frac{7}{8}$/73.02	—	—	120	80
81260	H148	3/76.20	—	$2\frac{1}{2}$/63.50	115	75
81263	H150	$3\frac{1}{16}$/79.37	—	—	110	70
81266	H152	$3\frac{1}{8}$/82.55	3/76.20	—	105	70
81269	H154	$3\frac{3}{8}$/85.72	—	—	100	65
81272	H156	$3\frac{1}{2}$/88.90	—	—	95	65
81275	H158	$3\frac{5}{8}$/92.07	—	3/76.20	95	60
81278	H160	$3\frac{3}{4}$/95.25	$3\frac{1}{2}$/88.90	—	90	60
81281	H162	$3\frac{7}{8}$/98.42	—	—	90	60
81284	H164	4/101.60	—	—	85	55
81287	H166	$4\frac{1}{8}$/104.77	—	$3\frac{1}{2}$/88.90	80	55
81290	H168	$4\frac{1}{4}$/108	—	—	80	55
81296	H172	$4\frac{1}{2}$/114.30	—	4/101.60	75	50
81299	H176	$4\frac{3}{4}$/120.65	—	—	75	50
81302	H180	5/127	—	—	65	45
81308	H188	$5\frac{1}{2}$/139.70	—	—	60	40
81314	H196	6/152.40	—	—	55	35

Nicholson® Bandsaws and Power Hacksaws

Band saw blade section

Obtaining maximum blade performance and durability

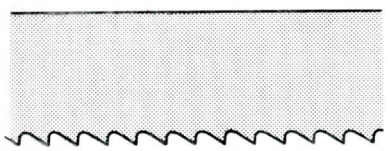
Performance of all cutting tools can be measured by the tool's ability to cope with (1) heat, (2) shock, (3) abrasion, (4) flexing. Red heat hardness is the cutting tool's capacity to tolerate the heat generated in the cutting operation without destroying the tool's cutting ability. High red heat hardness allows faster tool speeds, heavier feeds and faster cutting rates.
Resistance to shock is the ability to withstand impact blows caused by the vibrations inherent in cutting.
Abrasion resistance is an inherent characteristic of the material used to make the cutting tool and the heat treatment to which this material may be subjected. Wearability of a cutting tool is determined by its abrasion resistance and its hardness after heat treatment.
Flex life is the ability of the band saw blade to withstand repeated flexing around the wheels of the band sawing machine without breaking.

Durability chart

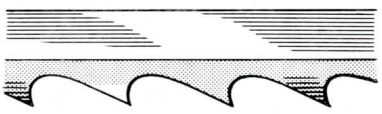
The following chart rates various band saw blades by their red heat hardness, resistance to shock, abrasion resistance and flex life. Red heat hardness is shown in degrees of temperature. Other characteristics are rated 1 through 5, with 1 indicating the highest quality and 5 meaning the lowest on the scale. The 1 through 5 ratings have no exact quantitative value and are used solely for the sake of comparison.

Blade type	Red Heat Hardness	Resistance to Shock	Resistance to Abrasion	Flex Life
Bi-Metaloy I	593°C	2	2	2
Bi-Metaloy III	538°C	3	1	2
Friction bands	204°C	1	5	1
Hard back bands	204°C	2	4	2
Flex back bands	204°C	2	4	3

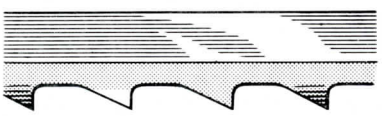
Band saw blade tooth selection



Regular tooth

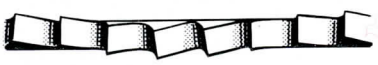


Hook Tooth



Skip Tooth

Raker set



Wavy set

A blade for every material and every purpose

Nicholson band saw blades are used on all cut-off and contour band saws. Nicholson blades are milled and set on automatic machines for uniform accuracy. Then they are heat treated under strictest control to the exacting requirements of the Nicholson "gradient hardness process." The razor-sharp tooth tip has a hardness ranging from Rockwell C63-65, with hardness gradually declining toward the tooth base (gullet) to Rockwell C48-50. This gives the tooth sufficient flexibility to prevent breakage and stripping, making the blades ideal for accurate high-production band sawing.
Nicholson saw blades are available with three different standard tooth designs, and three different standard tooth sets.

Tooth design

Regular tooth design has a 0° rake angle and a deep gullet with a smooth radius. This tooth is the most widely used and has the greatest selection of pitches.
Hook tooth design incorporates a 10° positive rake angle to permit greater chip removal without increasing frictional heat. Hardened teeth retain sharpness longer and provide more bite for fast cutting with light feed pessures. Recommended for use on wood, plastics, paper and non-ferrous metals and large cross sections of ferrous metals.
Skip tooth design has a 0° rake angle and provides greater chip clearance for fast, easy cutting of a wide range of materials. The strong, hardened teeth retain a sharp cutting edge and withstand heavy feeding pressures. An all-round choice for cutting wood, plastics and non-ferrous metals.

Tooth set

Raker set may be used for all jobs on horizontal and vertical band saws. Available in all three tooth designs.
Wavy set is used for thick sections of varying sizes. It allows the use of a larger pitch by minimizing the danger of tooth stripping. Available only in regular tooth design.

Choosing tooth coarseness

Ideally, at least 3 teeth should be in the work at all times. On very thin materials, at least 2 teeth should be in the material. Figures 1 and 2 illustrate the importance of choosing the appropriate degree of tooth coarseness. The chart on pages 72 and 73 gives exact recommendations for various thicknesses and materials. Fine tooth blades are used for cutting through sections such as sheet metal and light tubing. On harder materials, even finer teeth should be used. A proportionately finer tooth gives a finer finish. Coarse-tooth blades are used for cutting heavier sections, for softer and stringy materials and on thin stock at extremely high speeds.

Fig. 1

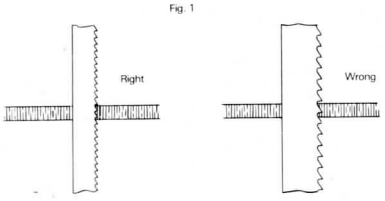
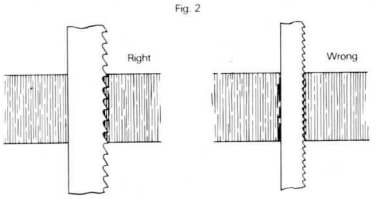


Fig. 2



Tooth and speed selection

For hard edge flexible back and hard back blades

W = Wavy H = Hook Tooth R = Raker S = Skip Tooth

Note: In special cases it is recommended to use Velcut set for cutting paper, wood, aluminum, mild steels, and plastics. Recommendations will be supplied on request.

Metals

	3/32"/2.38mm			1/4"/6.35mm			1/2"/12.70mm			1 1/4"/31.75mm			2 3/4"/69.85mm			6"/152mm		
Materials	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed
Carbon Steel	24	W	295	18	R	165	14	R	165	8	R	130	6	H	100	3	H	100
Nickel Steel	18	R	205	14	R	150	10	R	130	8	R	100	6	R	65	3	H	65
Chrome Steel	24	R	110	14	R	100	10	R	100	8	R	80	6	R	50	6	H	50
Chrome Nickel Steel	18	R	130	14	R	115	10	R	100	8	R	80	8	R	50	6	H	50
Stainless Steel	24	W	100	18	R	100	14	R	75	10	R	60	8	R	50	6	H	50
Chrome-Vanadium Steel	18	R	150	14	R	100	10	R	65	10	R	50	8	R	50	6	H	50
High Speed Steel	24	W	130	18	R	100	14	R	100	10	R	65	8	R	50	6	H	50
Hardening Steel	18	R	130	14	R	100	10	R	100	8	R	65	6	R	50	6	H	50
Manganese Alloy Steel	18	R	205	14	R	165	10	R	150	8	R	130	6	R	100	6	H	65
Molybdenum Alloy Steel	18	R	130	14	R	100	10	R	80	8	R	65	6	R	50	6	H	50
Tungsten Alloy Steel	18	R	150	14	R	115	10	R	100	10	R	80	8	R	50	6	H	50
Armor Plate	18	R	165	14	R	115	14	R	100	10	R	65	8	R	50	6	R	50
Gray Pig Iron	18	R	180	14	R	165	10	R	130	8	R	100	6	R	80	6	R	80
Malleable Cast Iron	18	R	205	14	R	180	10	R	165	10	R	150	8	R	130	6	R	100
High-test Cast Iron	18	R	230	14	R	200	10	R	200	10	R	165	8	R	115	6	R	80
Copper	10	R	2600	6	R	2600	4	S	2300	3	S	1950	3	S	1600	3	S	1300
Electrolytic Copper	14	R	1300	14	R	820	10	R	650	8	R	490	6	R	200	3	S	200
Berylium Alloy Copper	18	R	395	14	R	295	10	R	260	8	R	230	6	R	165	6	H	100
Mild Brass	10	R	2600	6	R	2600	4	S	2300	3	S	1950	3	S	1600	3	S	1300
Hard Brass	18	R	295	14	R	260	10	R	245	10	R	230	6	R	200	6	H	130
Mild Bronze	18	R	985	14	R	490	10	R	330	8	R	295	6	R	200	3	S	165
Manganese Bronze	18	R	295	14	R	245	10	R	230	8	R	215	6	R	200	3	H	165
Aluminum Bronze	18	R	205	14	R	130	10	R	115	8	R	100	6	R	50	3	H	50
Phosphor Bronze	18	R	490	14	R	425	10	R	395	6	R	295	4	S	260	3	S	200
Aluminum	4	S	3900	3	S	3900	3	S	3900	3	H	3900	3	H	3280	2	H	2600
Duraluminum & Aluminum	4	S	3900	3	S	3900	3	S	3280	3	H	2600	3	H	2300	2	H	1600
Alpax	4	S	3600	3	S	3280	3	H	2600	3	H	2300	3	H	1600	2	H	1300
Nickel	14	R	165	10	R	100	8	R	100	6	R	80	6	R	50	3	H	50
Silver	24	W	245	18	R	245	14	R	230	14	R	200	8	R	150	6	R	115
Lead	8	R	3900	3	S	3600	3	S	3280	3	S	3000	3	S	1950	2	S	1000
Zinc	8	R	3900	4	S	3750	4	S	3600	3	S	3280	2	S	2600	2	S	2300
Magnesium	10	R	3900	4	S	3750	3	S	3600	3	H	3280	3	H	2600	3	H	2300

Plastics

	3/32"/2.38mm			1/4"/6.35mm			1/2"/12.70mm			1 1/4"/31.75mm			2 3/4"/69.85mm			6"/152mm		
Materials	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed
Bakelite	10	R	1600	8	R	1600	8	R	1600	6	R	1600	4	S	1600	3	S	1000
Plexiglas	24	W	3900	10	R	3600	6	R	3280	3	S	3000	3	S	2600	2	S	2300
Cellulose Acetate	18	R	4900	10	R	4900	6	R	4600	4	S	3950	3	S	3750	2	S	3280
Vinyl Resine	14	R	4900	10	R	4900	6	R	4600	4	S	4280	3	S	3950	2	S	3280
Polystyrene	18	R	5250	10	R	5250	6	R	5250	4	S	4900	4	S	4600	3	S	4280
Molded Phenoplast (Synthetic Phenolic Resin) Bakelite	18	R	5250	10	R	5250	6	R	4900	4	S	4280	4	S	3900	2	S	3280
Paper Laminates (Formica) & Textile Laminates (Celoron)	14	R	5250	8	R	5250	6	R	4900	4	S	4260	4	S	3900	2	S	3280
Asbestos Wood Laminates	14	R	4590	10	R	4600	6	R	4260	4	S	4260	4	S	3000	3	S	2300
Ground Wood Laminates	14	R	4900	8	R	4900	6	R	4900	4	S	3900	3	S	3000	2	S	2600

Miscellaneous

Materials	3/32"/2.38mm			1/4"/6.35mm			1/2"/12.70mm			1 1/4"/31.75mm			2 3/4"/69.85mm			6"/152mm		
	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed	Teeth	Set	Speed
Asbestos	18	R	2130	14	R	1950	4	S	1600	4	S	1600	3	S	1600	3	S	1150
Brake Linings (according to abrasiveness)	10	R	2295	6	R	1800	6	R	1000	4	S	490	3	S	260	3	S	100
Carbon	8	R	4260	6	R	3900	4	S	3900	3	S	3900	2	H	2600	2	H	2300
Compressed Paper	18	R	4900	14	R	4900	10	R	4600	8	R	3900	3	H	3280	3	H	2600
Compressed Wood	8	R	4900	8	R	4600	6	R	3950	4	S	3900	3	H	3750	2	H	3600
Hard Wood	6	R	4900	6	R	4900	6	R	4280	4	S	3950	3	S	3900	3	S	3900
Rubber–Neoprene	14	R	4900	10	R	4900	8	R	4900	6	R	4600	3	H	3900	3	H	3280
Mica	32	W	1150	32	W	800	24	R	490	14	R	200	10	R	165	8	R	130
Shatterproof Glass	18	R	990	10	R	330	8	R	230	6	R	130	4	S	80	4	S	33

*Feet per minute

Suggested cutting techniques

Determining proper blade width

For straight cutting, use the widest width that the machine will allow. In contour radius cutting, the radius of the cut and material thickness are guiding factors in selecting blade width. Use the widest width that will cut the radius to be sawed.

Blade speeds

Higher speeds should be used on soft materials, slower speeds on harder materials. Check Nicholson tooth selection chart on pages 72 and 73.

High speed cutting

Speed range 1000 to 5000 S.F.P.M. used on non-ferrous metals, plastic, wood and rubber. Nicholson® skip tooth or hook tooth band saw blades. are recommended.

Blade tension

Blade tension depends on blade width, thickness and type of blade. Blades with hardened backs such as hard back, intermediate alloy and Bi-Metaloy® I and III can be used at twice the tension of hard edge flexible back blades. In general blades should be tensioned so they are taut and track properly. On machines with tension indicators, follow the settings for the width and type of blade.

Feed pressure

Ideal feeding pressure varies according to size and machinability of the material being cut. Slow speed with steady, moderate feed pressure gives maximum blade life. Excessive pressure often dulls the blade, and too light a feed causes the blade to slip over the work, resulting in premature blade wear. Use light feed on thin sections and when using blades 1/4"/6mm and under for radius cutting. Hard materials require heavier feed. It is good sawing practice to avoid starting the cut on a sharp corner. When unavoidable, begin the cut with light pressure.

Friction sawing

Detailed information is provided in the special purpose friction cutting section on page 80.

Welding and Grinding

1. Square ends of the blade before placing in welder.
2. Align blade correctly in welder jaws.
3. Welder tension adjusting should conform to width of blade.
4. After completing weld, reset jaws for annealing.
5. Anneal to proper heat. Cool slowly by jogging anneal switch.
6. Grind carefully—retain band thickness but make sure weld can pass freely through saw guides.
7. Always keep welder jaws clean.

Select the tooth carefully

Fig. 1

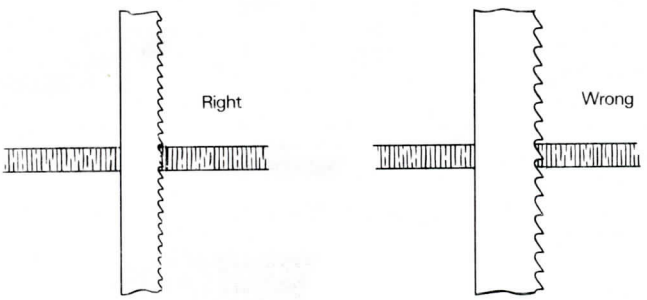
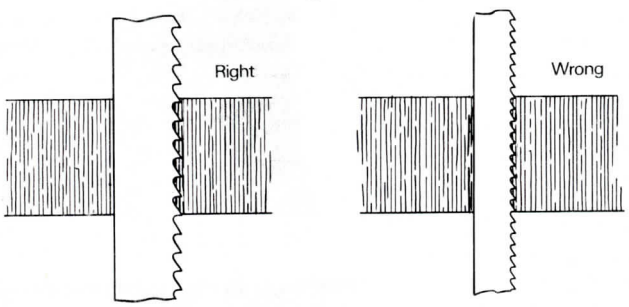
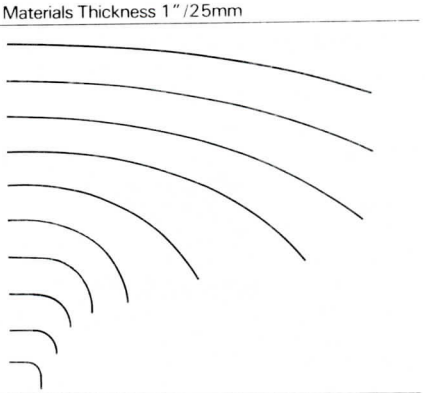


Fig. 2



Saw size	Radius
1"/25mm	7 1/4"/184mm
3/4"/19mm	5 7/16"/138mm
5/8"/16mm	3 3/4"/95mm
1/2"/13mm	2 1/2"/63mm
3/8"/10mm	1 1/4"/32mm
1/4"/6mm	5/8"/16mm
3/16"/5mm	3/8"/10mm
1/8"/3mm	7/32"/5.5mm
3/32"/2.4mm	1/8"/3mm
1 1/16"/27mm	90°

Materials Thickness 1"/25mm



Standard sizes for popular machines

Name of Machine	Length Ft.	Ins.
Armstrong-Blum No. 8	14	8
Armstrong-Blum No. 81 & 81A	14	6
Armstrong-Blum High Column No. 8	15	8
Atkins No. 3	15	8
Atkins No. 4	14	1
Avery Milband	14	9
Black & Decker 3120-21, 22-33	3	8⅞
(Portable)	x	.020
Boice Crane No. 800	7	6
Boice Crane No. 2300	8	2
Boice Crane 12″	6	5½
Clark Junior & Special	10	10
Clark Compound	15	6
Crescent B20M	11	3
Crescent Machine Co. 26″	13	9
Crescent Machine Co. 32″	16	4
Crescent Machine Co. 36″	18	6
Davis and Wells Comet	11	8
Delta No. 785 10″	6	2
Delta 12″ Wheel	6	6
Delta 14″ Wheel	7	9
Delta 14″ Wheel	7	9½
Delta 14″ Wheel (with extension)	8	9
Delta No. 20	11	9
Delta Homecraft	5	11½
DoAll J	7	0
DoAll JD	8	7
DoAll M	9	0
DoAll HS, HSV, LHV, SFP, V-16, ML, Z-16, U-16, P-16, 16-3, LSV, 16-2	10	0
DoAll HSV, SFP, HS, LHV, U-16, 1612-U, 1612-O	10	2
DoAll 1612-1, 1613-2, 1612-3, 1612-X1	10	5
DoAll C-4	10	11
DoAll C-12	11	0
DoAll MD	11	6
DoAll C-41A, C-55, C-56, C-57, C-58, C-67, C-68, C-69, C-70, C-169, C-170, C-80, C-180	12	0
DoAll SFP-30, LSV-30, HS-30, HSV-30	13	3
DoAll C-7, C-8, C-8A, 3012-U	13	4
DoAll MP20	13	6
DoAll MP20	13	8
DoAll V-36, SV36-16, SZ36-3, C36-3, CCS, ZV-36, V36-3	13	10
DoAll C-6	14	0
DoAll 36-2, 36-3, Z-36	14	3
DoAll 3613-0, 36-2, 36-3, 3612-3, MX20	14	7
DoAll 3612-3, 3613-2, 3613-1	14	7
DoAll V-26, 26-2, 2613-2, 2612-1 V-60 (2 wheels)	14	9
DoAll 26-3, 2613-3, 6013-3	15	6
DoAll 2618-4	17	1
DoAll TF-24, TF-36	17	2
DoAll 2626-5, 2624-5	17	11
DoAll 2624-5	18	0
DoAll 26-5	18	3
DoAll P16A, P-16M	19	0
DoAll ZS-2620, ZV-3620, ZW-3620	19	0

Name of Machine	Length Ft.	Ins.
DoAll 3GR, 36W, HP-36, C036	20	0
DoAll V-60, ZV-60 (3 wheels; 3624-X1)	21	2
DoAll Z36, 60-2, 6013-2, CZ-1620	21	3
DoAll 60-3, 60-4, Z-60, 6013-3, HS-6013	22	9
DoAll Z36, 60-2, 6013-2, CZ-1620	21	3
DoAll 60-3, 60-4, Z-60, 6013-3, HS-6013	22	9
DoAll C-2424, 1824	24	3
DoAll AC-2016	26	0
DoAll Pan Arm	28	6
Duro A-3027	5	8
Duro 12½″	6	6
Duro 12″	6	8
Duro 15″	8	8
Duro 16″	9	3
Emerson-Lynn 4500	5	4½
Emerson-Lynn 7126	8	11
Famco No. 612	8	9
Famco No. 612	8	10
J. A. Fay & Eagon Co. 30″	17	3
J. A. Fay & Eagon Co. 36″	20	6
Forte 250	12	0
Gibbes-Kennedy	11	6
Granville 9H	11	11
Granville 10H	13	3
Greenlee 521	4	6
Greenlee 346	6	9
Greenlee 348	8	10
Grob Co. 18 Cut-off Saw	13	6
Grob HS-24 Hi-Speed	14	4
Grob NS-18	12	0
Grob NS-24	14	4
Grob NS-36	15	10
Grob S-14	7	9
Grob S-14	9	9
Grob 2-24-U	15	5
Grob NS60	20	2
Grob OSN14, OSN20 (open end)	140	0
Houghton	12	6
Houghton-Richards 9″ Cup S-56 H	13	0
Hedromatic	12	10½
Ideal 9A	11	1
Johnson 10x18 Model J	11	5
Johnson Jr. Model B	7	5
Johnson B, MB1	7	5
Johnson R, MR1	7	9
Johnson HS and HSA	11	6
Johnson HS and HSA	14	6
Kalamazoo No. 610C, 610S	7	5
Kalamazoo, 7AD, 7AW, M7AD, M7AW, C7AD	7	5
Kalamazoo 30R, 30T (over 2 wheels)	9	3
Kalamazoo 18V, 18T	9	6
Kalamazoo Standard No. 816C, 816S, 816	10	5
Kalamazoo 24V, 24T	10	6
Kalamazoo 20R, 20T	10	10
Kalamazoo No. 8C, 8CD, 8CW, 9AD, 9AW, H9AD, H9AW	10	10½
Kalamazoo Large No. 824, 824A, 8AD, 8AW	12	1

Name of Machine	Length Ft.	Ins.
Kalamazoo 30R, 30T	12	3
Kalamazoo H10A	12	6
Kalamazoo 216, 316 (over 2 wheels)	11	5
Kalamazoo No. 1220C, 12B, 13AD, 13AW, 1220	13	11
Kalamazoo H12B	14	0
Kalamazoo 316 (over 3 wheels)	15	1½
Kalamazoo 14A	15	6
Klemm No. 1	11	2
Klemm No. 2	15	8
Ladlaw CM, CMT	15	8
Laidlaw JM30, SM30	16	0
Laidlaw Jr. & Special	10	10
Laidlaw JM20, SM20, SMT20	11	0
Laidlaw SMT-30	16	0
Laidlaw JM-30F, Dry	17	6
Marco	11	6
Marvel 612	8	10
Marvel No. 8	14	8
Marvel No. 8 (high column)	15	8
Marvel No. 81, 81A	14	6
Marvel No. 15, 15A	15	6
Meba	12	5½
Milband-Thompson	12	11
Milband-Thompson	15	0
Milclark	10	10
Milwaukee	3	8⅞
Moak 20″	11	1
Moak 26″	14	1
Moak 32″	16	10
Moak 36″	19	6
Monarch 72B, 20″	11	6
Monarch 61	14	0
Monarch X25, 30″	16	8
Monarch 38″	18	6
Monarch X40, 36″	21	11
Mossner SSF-350	9	8
Mossner	12	2
Napier B	12	3
Napier Jr	8	4
Oliver Mach. Co. No. 2520. 20″	8	8
Oliver Mach. Co. No. 192, 18″, 192D, 18″	9	8
Oliver Mach, Co. No. 217, 30″	15	11
Oliver Mach. Co. No. 217, 20″	16	0
Oliver Mach. Co. No. 116, 36″, 416D, 36″	19	6
Oliver Mach. Co. No. 115D, 38″	20	0
Peerless 2216, 1216, 1214, 1216M, 1216MH, 1300, Valumatic 12x16, 1400 Accumatic 12x16	12	0
Peerless 1300, Valumatic 12x18, 1400 Accumatic 12x18	12	4
Peerless 2400 MS, 4800 MS	14	0
Peerless 2600	15	6
Powermatic 2	13	1
Powermatic 5, 6, and 8	15	2
Powermatic 141 and 143	7	11
Powermatic 87, 81 and 89	12	6
Powermatic 87, 81, and 89	12	7
Presto	10	9
Racine	7	8
Rapid MBS-200	8	10
Ridgid 941, 942, 943	3	8⅞

Name of Machine	Length Ft.	Ins.
Rockwell Porta Bond	3	8⅞
Rockwell Mod. 6W (20-910)	8	11
Rockwell LVC	10	10
Rockwell Mod. 7 (20-920), Mod. 7A (20-950)	11	0
Rockwell Mod. 10 (20-930), Mod. 10A (20-960), Mod. 12A (20-970)	12	6
Rockwell Delta 20" (28-345), 20" (28-340)	12	6
Roll-In All Purpose	9	0
Roll-In Gravity Feed	9	2
Roll-In Journeyman	12	6
Rusch	12	0
Sawmaster	12	6
Stockbridge or H & R 6"	12	5½
Stockbridge or H & R 9"	13	0
Stockbridge or H & R 12"	15	5½
Tannewitz 24" E, EV	13	7
Tannewitz 30", P1, P1E, P3, PHE, PV1	17	0
Tannewitz 30", PHN, PHNE, PV1N, PV1NE	17	6
Tannewitz 36", G, G1E, G3, GH, GHE, GV1, GV1E, G7	19	9
Tannewitz 36", GHN, GHNE, GV1N, GVNE, G1NE	20	4
Tannewitz 42", R1, R1E, RH, RHE, RV1, RV1E, RVTE	22	0
Tannewitz 42", RHN, RHNE, RV1N, RV1NE	22	11
Tannewitz DiSaw 24M	13	7
Tannewitz DiSaw 24MS, 24MH, 24M	14	6
Tannewitz DiSaw 20MS, 30MH, 30M	17	10
Tannewitz DiSaw 36M	16	10
Tannewitz DiSaw 36MS, 36MH	17	2
Tannewitz DiSaw 48M, 48MS, 48MH	18	2
Tannewitz DiSaw 60M	19	10
Tannewitz DiSaw 60MS, 60MH	22	8
Tannewitz 2400MH	14	6
Tannewitz 2400MS	14	10
Tannewitz 3000MS, 3000MH	17	10
Tannewitz 3600MS, 3600MH (2 wheels)	14	10
Tannewitz 3600MH (3 wheel)	17	2
Tannewitz 3600MS (3 wheel)	17	6
Tannewitz 4800MH (2 wheel)	14	10
Tannewitz 4800MH (3 wheel)	18	2
Tannewitz 6000MS, 6000MH (2 wheel)	14	10
(3 wheel)	22	8
Thiele No. 17	9	3
Thompson	15	8
Thompson Miband	12	11
Thompson Milband	15	0
Walker-Turner 12"	6	6
Walker-Turner 14"	8	⅝
Walker-Turner 16" (MBM1105)	9	6¾
Walker-Turner 16" (MCB11513)	9	3½
Walker-Turner MCB1160	9	3
Walker-Turner MNB1105	9	6
Wells No. 5	8	2½
Wells No. 7A, 76, 8, 80	11	6
Wells No. 58B	7	9
Wells No. 9	9	5
Wells No. 12	13	7
Wells No. 49, 49A	5	0
Wells No. 800, 1000	11	6
Wells No. 1200	13	6
Wells No. 20 Std	16	0
Wells No. 600	8	2½
Wellsaw Mod. 300	5	0
Wellsaw Mod. 58B	7	9
Wellsaw Mod. 600	8	2½
Wellsaw Mod. 1270, 1200	13	6
Wellsaw Mod. 14	15	4
Wellsaw Mod. 20 Std	16	0
Wellsaw Mod. 1224-H	21	8
Wellsaw Mod. 2400A	32	3
Wellsaw Mod. 24008	36	3
Wespa	12	0
Wespa MS-3	8	½
Wespa MS-4	9	8
Wespa AS-4	10	2
Wespa AS-6	14	7
Wespa AS-9	13	11
Wespa ASH-6	14	9
Wespa ASH-9	19	8
Wespa US-63	17	2½
W. F. Wells & Sons Model F14, D14, Q14	14	5
W. F. Wells & Sons Model W9, L9, M9, H9	11	6
W. F. Wells & Sons Model J24	16	9
W. F. Wells & Sons Model A, A7, A6	17	10
W. F. Wells & Sons Mod. QJ24	21	0
W. F. Wells & Sons Mod. X60	20	10
W. F. Wells & Sons Mod. T40	26	11
Whitney-Stueck A24S, A243, A24V, A24F	13	5
Williamson No. 2, No. 3	20	9
Williamson No. 3	24	6
Wilton 3002, 3003, 3010	5	4½
Wright No. P, 1, 2, 3	15	8
Wright No. 4	19	0

Bi-Metaloy®

Bi-Metaloy blades consist of a high speed steel edge, electron beam welded to a special alloy steel back. After welding, teeth are milled to a point below the weld line. Bi-Metaloy blades offer perfect sawing accuracy on every known material.

Cutting edge

Two different cutting edge alloys are available in Bi-Metaloy band saw blades. Each alloy provides paraticular characteristics needed for certain types of sawing operations and for various materials.

Backing

The backing material of the Bi-Metaloy band is a special alloy designed to produce maximum tensile strength and resistance to fatigue. This backing allows the use of high blade tensions to provide the ultimate in sawing accuracy.

Bi-Metaloy blades can be welded on standard butt welding equipment, enabling welds to be made as required by the user. However, blades used on high performance sawing machines, such as the Marvel 81-A, Do-All power saws, the Mill Band, Peerless and the Kalamazoo H-12B, should be produced on heavy duty welding equipment. The requirements imposed on the weld by these and other similar machines are beyond the capacity of welds that can be made on standard welders in the field.

Bi-Metaloy® I

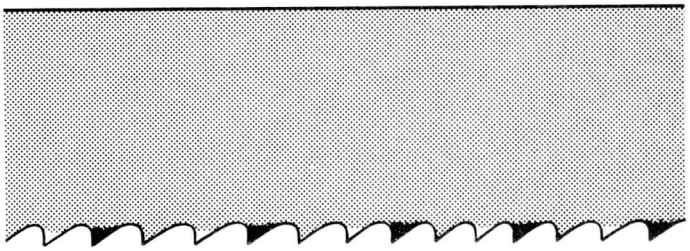
The cutting edge of Bi-Metaloy 1 is M-2 high speed steel that has been heat treated to a hardness of 64-65 Rockwell C and is preferred for all general purpose cutting. Bi-Metaloy 1 will outperform solid high speed steel band saw blades by as much as 2 to 1.

Width ″/mm	Gauge Inches	Teeth Per Inch	Cat. & N/S Nos. 150′/46m Coil	Welded* Lengths
¼/6.35	.035	10 Raker	65001	65009
¼/6.35	.035	6 Hook	69131	69139
⅜/9.52	.035	8 Raker	65021	65029
⅜/9.52	.035	10 Raker	65031	65039
⅜/9.52	.035	4 Hook	69141	69149
⅜/9.52	.035	6 Hook	69151	69159
½/12.70	.025	10 Raker	69171	69179
½/12.70	.025	14 Raker	69201	69209
½/12.70	.035	6 Raker	69221	69229
½/12.70	.035	8 Raker	69231	69239
½/12.70	.035	10 Raker	65051	65059
½/12.70	.035	14 Raker	69261	69269
½/12.70	.035	3 Hook	69271	69279
½/12.70	.035	4 Hook	69281	69289
½/12.70	.035	6 Hook	65071	65079
¾/19.05	.035	6 Raker	65081	65089
¾/19.05	.035	8 Raker	65091	65099
¾/19.05	.035	10 Raker	65101	65109
¾/19.05	.035	3 Hook	69651	69659
¾/19.05	.035	4 Hook	69661	69669
¾/19.05	.035	6 Hook	69671	69679
1/25.40	.035	4 Raker	65121	65129
1/25.40	.035	6 Raker	65131	65139
1/25.40	.035	8 Raker	65141	65149
1/25.40	.035	10 Raker	65151	65159
1/25.40	.035	3 Hook	65161	65169
1/25.40	.035	4 Hook	65171	65179
1/25.40	.035	6 Hook	69771	69779
1/25.40	.042	4 Raker	69781	69789
1/25.40	.042	6 Raker	69791	69799
1/25.40	.042	3 Hook	69541	69549
1¼/31.75	.042	4 Raker	69081	69089
1¼/31.75	.042	6 Raker	69091	69099
1¼/31.75	.042	8 Raker	69571	69579
1¼/31.75	.042	3 Hook	69101	69109

*Specify length in feet and inches.

Variable Pitch Bi-Metaloy® I-VP5

Bi-Metaloy blade for high-speed cutting on pipe, tubing, structurals. Reduces vibration and noise.
VP5, the newest Bi-Metaloy blade, uses the Variable Pitch design of gradually increasing and decreasing distance between teeth. The variable pitch blade has five increasingly spaced, alternately set teeth, followed by one raker tooth. Then there are five alternately set teeth with decreasing space between each, again followed by one raker tooth. This pattern assures having two teeth in the work at all times, which takes the guesswork out of blade selection and reduces vibration, noise and tooth strippage.

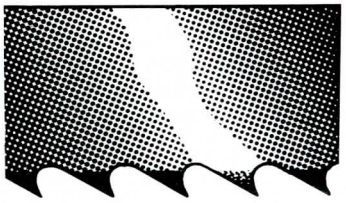


Width ″/mm	Gauge Inches	Teeth Per Inch	Cat. & N/S Nos. 150′/46m Coil	Welded* Lengths
¾/19.05	.032	6 VP 5	70601	70609
¾/19.05	.032	8 VP 5	70611	70619
¾/19.05	.032	10 VP 5	70621	70629
¾/19.05	.032	14 VP 5	70631	70639
¾/19.05	.035	6 VP 5	69611	69619
¾/19.05	.035	8 VP 5	69621	69629
¾/19.05	.035	10 VP 5	69641	69649
1/25.40	.035	8 VP 5	69751	69759
1/25.40	.035	10 VP 5	69761	69769
1/25.40	.035	14 VP 5	69741	69749
1/25.40	.035	4 VP 5	70811	70819
1/25.40	.035	6 VP 5	70821	70829
1/25.40	.042	3 VP 5	70801	70809
1¼/31.75	.042	3 VP 5	70851	70859
1¼/31.75	.042	4 VP 5	70861	70869
1¼/31.75	.042	6 VP 5	70921	70929
1¼/31.75	.042	8 VP 5	70431	70439
1½/38.10	.050	2 VP 5	70511	70519
1½/38.10	.050	3 VP 5	70521	70529
1½/38.10	.050	4 VP 5	70531	70539
1½/38.10	.050	6 VP 5	70541	70549
2/50.80	.050	2 VP 5	70641	70649
2/50.80	.050	3 VP 5	70651	70659
2/50.80	.050	4 VP 5	70661	70669
2/50.80	.050	6 VP 5	70671	70679

*Specify length in feet and inches.

Bi-Metaloy® III

Bi-Metaloy III has a cutting edge of M-42 high speed steel that has been heat treated to a hardness of 68-69 Rockwell C to provide the maximum abrasion resistance needed for sawing space-age alloys, hardened materials and stainless steels. This high speed steel tooth retains full hardness during the entire life of the blade.

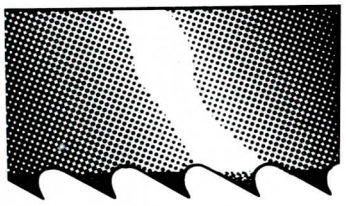


Width "/mm	Gauge Inches	Teeth Per Inch	Cat. & N/S Nos. 150'/46m Coil	Welded* Lengths
1/25.40	.035	3 Hook	69801	69809
1/25.40	.035	4 Raker	69811	69819
1/25.40	.035	6 Raker	69821	69829
1/25.40	.035	8 Raker	69831	69839
1/25.40	.035	10 Raker	69841	69849
1/25.40	.042	3 Hook	69851	69859
1/25.40	.042	6 Raker	69861	69869
1/25.40	.042	6 Raker	69871	69879
1¼/31.75	.042	3 Hook	69881	69889
1¼/31.75	.042	4 Raker	69891	69899
1¼/31.75	.042	6 Raker	69901	69909

*Specify length in feet and inches.

Variable Pitch 5 hook (VP5) Bi-Metaloy® III

This versatile blade allows faster production sawing of everything from solids to tubing, reducing the necessity for blade changes and lowering the cost-per-cut. The unique tooth spacing and pitch set of the VP5, as well as its unequaled Bi-Metaloy construction, reduce both vibration and noise while increasing shock resistance and minimizing tooth strippage.



Width "/mm	Gauge Inches	Teeth Per Inch	Cat. & N/S Nos. 150'/46m Coil	Welded* Lengths
¾/19.05	.035	4 VP 5	65011	65019
¾/19.05	.035	6 VP 5	65041	65049
¾/19.05	.035	8 VP 5	65061	65069
1/25.40	.035	4 VP 5	69721	69729
1/25.40	.035	6 VP 5	69731	69739
1/25.40	.035	8 VP 5	70181	70189
1/25.40	.035	10 VP 5	70171	70179
1¼/31.75	.042	3 VP 5	69911	69919
1¼/31.75	.042	4 VP 5	69921	69929
1¼/31.75	.042	6 VP 5	69931	69939
1¼/31.75	.042	8 VP 5	70191	70199
1½/38.10	.050	2 VP 5	69961	69969
1½/38.10	.050	3 VP 5	69981	69989
1½/38.10	.050	4 VP 5	69971	69979
1½/38.10	.050	6 VP 5	69991	69999
2/50.80	.050	2 VP 5	65211	65219
2/50.80	.050	3 VP 5	65221	65229
2/50.80	.050	4 VP 5	65231	65239
2/50.80	.050	6 VP 5	65241	65249

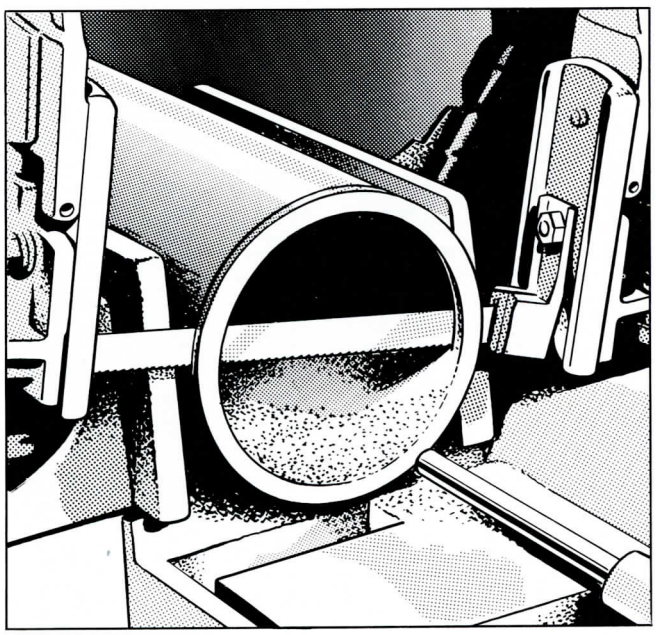
*Specify length in feet and inches.

Hard back

Hard back was developed by Nicholson® to increase production and save time on tough jobs, such as cutting structural shapes where guides must be set some distance apart in relation to thickness or material being cut.

Added beam strength, plus increased tensioning, provide greater rigidity for more efficient and economical use in most applications requiring heavy feed pressures. Especially recommended for cut-off and contour sawing.

A faster, straighter-cutting band saw. No premature fatigue. No side scoring, peening, swedging or loss of time through breakage. On cut-off work, often three times as efficient as regular blades.



Width "/mm	Gauge Inches	Teeth Per Inch	Catalog & Nida/Sida Numbers 100'/30.5m Coil	250'/76m Coil	Welded* Lengths
1/4/6.35	.025	10 Raker	66181	66182	66189
1/4/6.35	.025	14 Raker	66201	66202	66209
1/4/6.35	.025	18 Raker	66211	66212	66219
1/4/6.35	.025	24 Raker	66221	66222	66229
1/4/6.35	.025	4 Skip	66271	66272	66279
1/4/6.35	.025	6 Skip	66281	66282	66289
1/4/6.35	.025	4 Hook	66241	66242	66249
1/4/6.35	.025	6 Hook	66251	66252	66259
3/8/9.52	.025	8 Raker	66291	66292	66299
3/8/9.52	.025	10 Raker	66301	66302	66309
3/8/9.52	.025	14 Raker	66321	66322	66329
3/8/9.52	.025	18 Raker	66331	66332	66339
3/8/9.52	.025	4 Skip	66401	66402	66409
3/8/9.52	.025	4 Hook	66361	66362	66369
3/8/9.52	.025	6 Hook	66371	66372	66379
1/2/12.70	.025	6 Raker	66451	66452	66459
1/2/12.70	.025	10 Raker	66471	66472	66479
1/2/12.70	.025	14 Raker	66491	66492	66499
1/2/12.70	.025	18 Raker	66501	66502	66509
1/2/12.70	.025	24 Raker	66511	66512	66519
1/2/12.70	.025	10 Wavy	66521	66522	66529
1/2/12.70	.025	14 Wavy	66531	66532	66539
1/2/12.70	.025	24 Wavy	66541	66542	66549
1/2/12.70	.025	3 Skip	66591	66592	66599
1/2/12.70	.025	4 Skip	66601	66602	66609
1/2/12.70	.025	3 Hook	66551	66552	66559
1/2/12.70	.025	4 Hook	66561	66562	66569
1/2/12.70	.025	6 Hook	66571	66572	66579
5/8/15.87	.032	8 Raker	66641	66642	66649
5/8/15.87	.032	10 Raker	66651	66652	66659
5/8/15.87	.032	14 Raker	66671	66672	66679
5/8/15.87	.032	18 Raker	66681	66682	66689
5/8/15.87	.032	14 Wavy	67091	67092	67099
3/4/19.05	.032	6 Raker	66701	66702	66709
3/4/19.05	.032	8 Raker	66711	66712	66719
3/4/19.05	.032	10 Raker	66721	66722	66729
3/4/19.05	.032	12 Raker	66731	66732	66739
3/4/19.05	.032	14 Raker	66741	66742	66749
3/4/19.05	.032	8 Wavy	66761	66762	66769
3/4/19.05	.032	10 Wavy	66771	66772	66779
3/4/19.05	.032	12 Wavy	66781	66782	66789
3/4/19.05	.032	14 Wavy	66791	66792	66799
3/4/19.05	.032	18 Wavy	66801	66802	66809
3/4/19.05	.032	3 Skip	66861	66862	66869
3/4/19.05	.032	3 Hook	66821	66822	66829
3/4/19.05	.032	6 Hook	66841	66842	66849
1/25.40	.035	6 Raker	66901	66902	66909
1/25.40	.035	8 Raker	66911	66912	66919
1/25.40	.035	10 Raker	66921	66922	66929
1/25.40	.035	14 Raker	66931	66932	66939
1/25.40	.035	10 Wavy	66941	66942	66949
1/25.40	.035	2 Hook	66961	66962	66969
1/25.40	.035	3 Hook	66971	66972	66979
1 1/2/31.75	.042	6 Raker	—	—	67019
1 1/2/31.75	.042	8 Raker	—	—	67029

*Specify length in feet and inches.

Hard edge flexible back

Magicut® blades for smooth, efficient performance. Nicholson® hard edge flexible back blades are recommended for contour machines run in the high speed range of 500 to 5000 S.F.M. The hard edge flex back blade offers greater flex life in contour cutting of wood, plastic, paper and non-ferrous metals.

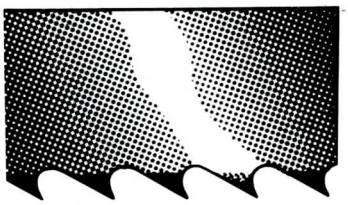
Width	Gauge	Teeth	Catalog & Nida/Sida Numbers 100'/30.50m	250'/76.20m	Welded*
" /mm	Inches	Per Inch	Coil	Coil	Lengths
1/16/1.58	.025	24 Raker	67111	—	67119
1/16/1.58	.025	24 Raker	67121	—	67129
1/16/1.58	.025	32 Wave	67131	—	67139
1/8/3.17	.025	14 Raker	67181	—	67189
1/8/3.17	.025	18 Raker	67191	—	67199
1/8/3.17	.025	24 Raker	67201	—	67209
3/16/4.76	.025	10 Raker	67221	67222	67229
3/16/4.76	.025	14 Raker	67231	67232	67239
3/16/4.76	.025	18 Raker	67241	67242	67249
3/16/4.76	.025	24 Raker	67251	67252	67259
3/16/4.76	.025	4 Skip	67291	67292	67299
3/16/4.76	.025	6 Skip	67301	67302	67309
1/4/6.35	.025	10 Raker	67341	67342	67349
1/4/6.35	.025	12 Raker	67351	67352	67359
1/4/6.35	.025	14 Raker	67361	67362	67369
1/4/6.35	.025	18 Raker	67371	67372	67379
1/4/6.35	.025	24 Raker	67381	67382	67389
1/4/6.35	.025	14 Wavy	67391	—	67399
1/4/6.35	.025	32 Wavy	67421	67422	67429
1/4/6.35	.025	4 Hook	67441	67442	67449
1/4/6.35	.025	4 Hook ETS	—	70302	70309
1/4/6.35	.032	4 Hook ETS	—	67532	67539
1/4/6.35	.025	6 Hook	67451	67452	67459
1/4/6.35	.025	4 Skip	67491	67492	67499
1/4/6.35	.025	6 Skip	67501	67502	67509
3/8/9.52	.025	8 Raker	67541	67542	67549
3/8/9.52	.025	10 Raker	67551	67552	67559
3/8/9.52	.025	12 Raker	67561	—	67569
3/8/9.52	.025	14 Raker	67571	67572	67579
3/8/9.52	.025	18 Raker	67581	67582	67589
3/8/9.52	.025	24 Raker	67591	67592	67599
3/8/9.52	.025	3 Hook	67631	67632	67639
3/8/9.52	.025	4 Hook	67641	67642	67649
3/8/9.52	.025	6 Hook	67651	67652	67659
3/8/9.52	.025	3 Skip	67681	67682	67689
3/8/9.52	.025	4 Skip	67691	67692	67699
3/8/9.52	.025	6 Skip	67701	67702	67709
3/8/9.52	.025	4 Hook ETS	—	70312	70319
3/8/9.52	.032	3 Hook ETS	—	67712	67719
1/2/12.70	.020	10 Raker	67721	67722	67729
1/2/12.70	.020	14 Raker	67731	67732	67739
1/2/12.70	.020	18 Raker	67741	67742	67749
1/2/12.70	.020	24 Wavy	68981	68982	68989
1/2/12.70	.025	4 Raker	67771	67772	67779
1/2/12.70	.025	6 Raker	67781	67782	67789
1/2/12.70	.025	8 Raker	67791	67792	67799
1/2/12.70	.025	10 Raker	67801	67802	67809
1/2/12.70	.025	12 Raker	67811	67812	67819
1/2/12.70	.025	14 Raker	67821	67822	67829
1/2/12.70	.025	18 Raker	67841	67842	67849
1/2/12.70	.025	24 Raker	67851	67852	67859
1/2/12.70	.025	10 Wavy	67871	67872	67879
1/2/12.70	.025	14 Wavy	67881	67882	67889

*Specify length in feet and inches.

Width	Gauge	Teeth	Catalog & Nida/Sida Numbers 100'/30.50m	250'/76.20m	Welded*
" /mm	Inches	Per Inch	Coil	Coil	Lengths
1/2/12.70	.025	18 Wavy	67891	67892	67899
1/2/12.70	.025	24 Wavy	67901	67902	67909
1/2/12.70	.025	2 Hook	67911	67912	67919
1/2/12.70	.025	3 Hook	67921	67922	67929
1/2/12.70	.025	4 Hook	67931	67932	67939
1/2/12.70	.025	6 Hook	67941	67942	67949
1/2/12.70	0.32	2 Hook ETS	—	70322	70329
1/2/12.70	0.32	3 Hook ETS	—	68002	68009
1/2/12.70	.025	3 Skip	67961	67962	67969
1/2/12.70	.025	4 Skip	67971	67972	67979
1/2/12.70	.025	6 Skip	67981	67982	67989
5/8/15.87	.032	8 Raker	68071	68072	68079
5/8/15.87	.032	10 Raker	68081	68082	68089
5/8/15.87	.032	14 Raker	68101	68102	68109
5/8/15.87	.032	18 Raker	68111	68112	68119
5/8/15.87	.032	10 Wavy	68141	68142	68149
5/8/15.87	.032	14 Wavy	68161	68162	68169
5/8/15.87	.032	4 Hook	68181	68182	68189
5/8/15.87	.032	3 Skip	68201	68202	68209
5/8/15.87	.032	4 Skip	68211	68212	68219
3/4/19.05	.032	6 Raker	68241	68242	68249
3/4/19.05	.032	8 Raker	68251	68252	68259
3/4/19.05	.032	10 Raker	68261	68262	68269
3/4/19.05	.032	12 Raker	68271	68272	68279
3/4/19.05	.032	14 Raker	68281	68282	68289
3/4/19.05	.032	18 Raker	68291	68292	68299
3/4/19.05	.032	8 Wavy	68301	68302	68309
3/4/19.05	.032	10 Wavy	68311	68312	68319
3/4/19.05	.032	12 Wavy	68321	68322	68329
3/4/19.05	.032	14 Wavy	68331	68332	68339
3/4/19.05	.032	18 Wavy	68341	68342	68349
3/4/19.05	.032	2 Hook	68371	68372	68379
3/4/19.05	.032	3 Hook	68381	68382	68389
3/4/19.05	.032	4 Hook	68391	68392	68399
3/4/19.05	.032	6 Hook	68401	68402	68409
3/4/19.05	.032	3 Skip	68441	68442	68449
3/4/19.05	.032	4 Skip	68461	68462	68469
3/4/19.05	.032	3 Bana	68451	68452	68459
1/25.40	.035	4 Raker	68521	68522	68529
1/25.40	.035	6 Raker	68531	68532	68539
1/25.40	.035	8 Raker	68541	68542	68549
1/25.40	.035	10 Raker	68551	68552	68559
1/25.40	.035	14 Raker	68571	68572	68579
1/25.40	.035	10 Wavy	68581	68582	68589
1/25.40	.035	2 Hook	68591	68592	68599
1/25.40	.035	3 Hook	68601	68602	68609
1/25.40	.035	4 Hook	68611	68612	68619
1/25.40	.035	6 Hook	68621	68622	68629
1/25.40	.035	2 Skip	68661	68662	68669
1/25.40	.035	3 Skip	68671	68672	68679
1/25.40	.035	4 Skip	68681	68682	68689
1 1/4/31.75	.042	6 Raker	68801	68802	68809
1 1/4/31.75	.042	8 Raker	68811	68812	68819
1 1/4/31.75	.042	3 Skip	68841	68842	68849

* Hard edge flex back variable pitch for wood

These specially designed blades give better performance and standard tooth style while reducing noise and vibration. They are recommended for production cutting of wood and other non-ferrous material when noise or vibration is a problem. They replace the velcut tooth style of the past.



Width ″/mm	Gauge Inches	Teeth Per Inch	Catalog & Nida/Sida Numbers 100′/30.50m Coil	250′/76.20m Coil	Welded** Lengths
¼/6.35	.025	4 VP Hook	70701	70702	70709
¼/6.35	.032	4 VP Hook	70711	70712	70719
⅜/9.52	.025	3 VP Hook	70721	70722	70729
⅜/9.52	.025	4 VP Hook	70731	70732	70739
⅜/9.52	.032	3 VP Hook	70741	70742	70749
⅜/9.52	.032	4 VP Hook	70751	70752	70759
½/12.70	.025	4 VP Hook	70761	70762	70769
½/12.70	.032	3 VP Hook	70771	70772	70779
¾/19.05	.032	3 VP Hook	70781	70782	70789
1/25.40	.035	3 VP Hook	70791	70792	70799
¼/6.35	.025	4 Hook ETS	—	70302	70309
¼/6.35	.032	4 Hook ETS	—	67532	67539
⅜/9.52	.025	4 Hook ETS	—	70312	70319
⅜/9.52	.032	3 Hook ETS	—	67712	67719
½/12.70	.032	2 Hook ETS	—	70322	70329
½/12.70	.032	3 Hook ETS	—	68002	68009

**Specify length in feet and inches.
*Replaces flexible back bandsaw with velcut set and E.T.S.

Friction cutting

Friction sawing, at blade speeds from 5000 to 15000 feet per minute, is one of the fastest, most economical methods of cutting ferrous metals up to ½″/12.70mm thick. The frictional heat, generated by the high velocity of the blade, softens the metal being cut. The saw tooth then removes this softened film of metal in the form of red-hot chips.
Nicholson® friction blades are engineered to withstand the heat generated in friction sawing and provide the strength needed to withstand heavy feeds and high speeds.
Nicholson friction blades assure the most efficient metal removal in shaping and trimming stainless, monel and armor plate. They are recommended for use on sturdy machines with large diameter wheels.
For specific recommendations on friction cutting of materials over ½″/12.70mm thick, consult your Nicholson sales engineer through your Nicholson distributor, or write to Nicholson directly.

Width ″/mm	Gauge Inches	Teeth Per Inch	Catalog & Nida/Sida Numbers 100′/30.50m Coil	250′/76.20m Coil	Welded* Lengths
½/12.70	.032	10 Raker	68891	68892	68899
½/12.70	.032	14 Raker	68901	68902	68909
⅝/15.87	.035	10 Raker	68911	68912	68919
⅝/15.87	.035	14 Raker	68921	68922	68929
¾/19.05	.035	10 Raker	68931	68932	68939
¾/19.05	.035	14 Raker	68941	68942	68949
1/25.40	.035	10 Raker	68951	68952	68959
1/25.40	.035	14 Raker	68961	68962	68969

*Specify length in feet and inches.

Butcher band saw blades

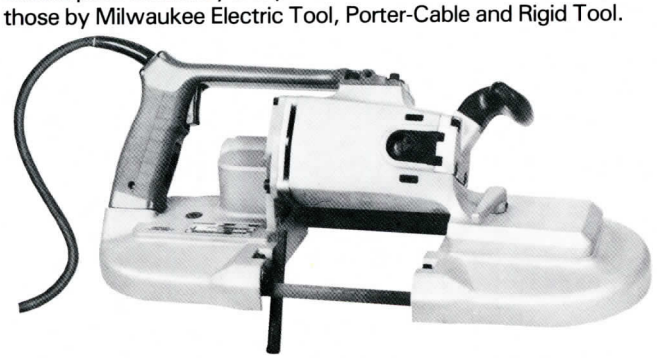
Nicholson Butcher band saw blades have light gauge and light set with large gullets for fast, easy cutting with minimum kerf loss.

Width ″/mm	Gauge Inches	Teeth Per Inch	Catalog & Nida/Sida Numbers 100′/30.50m Coil	250′/76.20m Coil	Welded* Lengths
⅝/15.87	.020	4 Butcher	68041	68042	68049
⅝/15.87	.025	4 Butcher	68061	68062	68069

*Specify lengths in feet and inches.

Blades for portable band saw machines

Nicholson blades for portable band saw machines are made to ensure peak efficiency and performance on machines such as those by Milwaukee Electric Tool, Porter-Cable and Rigid Tool.



Available custom welded in the following specifications:

Width ″/mm	Gauge Inches	Length	Teeth Per Inch	Type	Cat./N/S No./No.
½/12.70	.020	3′8⅞″	10 Raker	Bi-Metaloy I	69169
½/12.70	.020	3′/8⅞″	14 Raker	Bi-Metaloy I	69189
½/12.70	.020	3′8⅞″	18 Raker	Bi-Metaloy I	69199
½/12.70	.020	3′8⅞″	10 Raker	Flex Back	67729
½/12.70	.020	3′8⅞″	14 Raker	Flex Back	67739
½/12.70	.020	3′8⅞″	18 Raker	Flex Back	67749
½/12.70	.020	3′8⅞″	24 Wavy	Flex Back	68989

All flex back blades are packaged 10 per master carton only.

Blade comparison chart

Carbon steel

Manufacturers	Hard edge flex back	Hard edge hard back
Nicholson®	**Hard edge**	**Hard back**
American Saw (Lenox)	Die-Master	Neo-Type
Armstron Blum (marvel)	Hard edge flex back	Hard back hard edge
Atlantic Saw	Flex back	Hi-Flex
Capewell Mfg. Company	Flex back hard tooth	Tuf-back
Clemson Bros. (Star, Victor)	Flex back	Tru-Cut
Diamond Saw (broach, sterling)	Hard edge	Tri-Temp
Disston, Inc.	Flex back hard edge	Temper back
DoAll	Precision standard carbon	Dart
Miller Falls	Tuf-Flex.	Tuf-Temper
Simonds	Hard edge	Si-Met
Spartan Flex	Spar-Cut	Flexard
Starrett	Hard Edge Flex Back	Premium
Henry G. Thompson (Milford)	Flex Back	Super TT-44

Welded edge

M2	M41 or M42
Bi-Metaloy® I	**Bi-Metaloy® III**
Electron Weld	Super Electron Weld
High Speed Welded Edge	Cobalt H.S. edge
Gold Line Bi-Metal	
Super T Weld	
Welded Tooth	
Super Weld	
Bi Metal	
Imperial 100	Imperial 101
Blu-Mol Welded Edge	
Weld Edge	Weld Edge
Saf-T-Edge	Cobalt H.S. Edge
Powerband	
Rezistor Bi-Band	Cobra

Solutions to band saw problems

Chipped teeth
1. Blade too coarse for material being cut. Use finer tooth blade.
2. Feed pressure too heavy in relation to blade speed. Either decrease feed or increase speed slightly.

Stripped teeth
1. Blade too coarse for material being cut – chip load is too heavy per tooth. Change to finer tooth blade.
2. Blade too fine – chips loading in gullets. Change to a coarser tooth blade.
3. Irregular feed pressure. Check hydraulic system for air in the lines or dirty oil.
4. Excessive feed pressure, causing loading. Reduce pressure.
5. Not enough speed, causing shock, increase speed.
6. Hard spots in the material causing shock, increase feed pressure.

Premature wear
1. Excessive blade speed or excessive feed pressure. Balance blade speed and feed pressure.
2. Insufficient blade tension causing blade to cock slightly, preventing straight cut. Increase blade tension.
3. Insufficient cutting fluid, wrong type of cutting fluid, or concentration of cutting fluid allows excessive heat to be generated at the tooth tips, reducing wear resistance. Cutting fluid should be the proper type for the material being cut.

Blade breakage
1. Improper blade tension. Check with pressure gauge or tension measuring device.
2. Worn back-up bearings and/or worn side guides. Replace worn parts and make sure side guides have been accurately ground for parallel position.
3. Excessive blade speed. The faster a blade is run, the sooner it will fatigue. Flexing around the wheels induces fatigue, a common problem to all high speed bands. Reduce blade speed slightly and reset feed pressure to maintain cutting rate.
4. Excessive feed pressure. Reduce pressure.

Crooked cuts
1. Improper guide adjustment or worn faces on side of guides. Guides should not be too tight. Machines using high performance bands must be equipped with carbide-faced guides to minimize wear and support the blade properly. The thrust bearing should be checked against freezing or grooving. Replace if worn more than .020" or chipped.
2. Chips welding to teeth due to inadequate chip removal or improper cutting fluid. Check chip brush to be sure it is removing chips properly. Check cutting fluid to be sure it is providing adequate lubrication and chip removal.
3. Excessive feed pressure. Reduce pressure.
4. Insufficient blade tension. Check tension with pressure gauge.
5. Improper blade alignment. Check alignment of flange type wheels.

Rough cutting
1. Improper tooth selection. See tooth selection chart on pages 72 & 73.
2. Bad set-up. Support work more firmly.

Blade edge sweeping
1. Worn back-up guides. Replace.
2. Back-up guide fails to rotate. Replace or clean to allow free rotation.
3. Excessive feed pressure. Reduce.
4. Blade too close to flanges. Adjust.

Blade vibration
1. Harmonics. Change feed, speed or tooth.

Chips welding to teeth
1. Brush not operating. Check it closely.
2. Excessive feed. Reduce.
3. Speed too high. Reduce.
4. Improper cutting fluid or insufficient cutting fluid. Increase amount of cutting fluid, increase concentration of cutting fluid or change to the proper cutting fluid.

Note: Water soluble or synthetic coolants should be mixed 5:1 (5 parts water to 1 part coolant concentrate). Improper coolant mix or application may cause chip welding, chipped teeth, blade breakage or premature wear.

Power hacksaw blades

Power hack sawing is an extremely economical and efficient method of separating metal. To get maximum performance it is necessary to operate the machine correctly and to maintain it in the best possible condition. Select the correct blade – the type of power blade to use is largely determined by the material to be cut. Its proper selection pays dividends. Combine with it the correct tooth specification, speed and feed and you get maximum cutting and longer blade life. There is a particular blade best suited for certain types of cutting. Three Nicholson power blades, produced from quality high speed steel, have been developed. There is a Nicholson power blade for your machine sawing job.

The Nicholson power blade selector is a useful guide. Remember that tooth selection may vary according to individual machines as well as specific applications. Where two or more specifications are given, tooth is determined by size and shape of material being cut. Width of blade is determined by usage, the design of machine, length of blade and feed to be applied. Narrow blades are used for normal duty. Wide blades are

preferable for heavy duty cutting of multiple bars or longer cross sections.

General recommendations for power machine use

3 Tooth: Greatest chip clearance for large sections to increase tooth penetration.

4 Tooth: Has geater chip clearance which enables faster cutting on large or readily machined metals.

6 Tooth: Frequently used for machining the harder alloys as well as for miscellaneous sawing.

10-14 Tooth: The majority of light duty power saws use 10-Tooth and 14-Tooth saws because application is limited to smaller sections.

Blade speed in power sawing ranges from 60–150 strokes per minute. In cutting of soft metals, a speed up to the maximum 150 strokes may be employed. Lower speeds are advisable when the material to be cut is not readily machinable – and will be most efficient in production and increased blade life. Excessive feed and blade speed increase the rate of cutting but add to blade cost. Many times it is economical to sacrifice maximum blade life in order to get utmost production at reduced operating cost. Moderate feed pressure is recommended for soft materials and light cross sections. Moderate feed is also suggested when using a fine tooth to minimize clogging.

Increased feed is required on harder materials and heavier sections. Increased feed may be used with coarse tooth blades to give maximum production on softer materials.

Reduced feed is frequently necessary on positive feed power hack saw machines as cross sections increase and machinability decreases.

It is good sawing practice to avoid starting the cut on a sharp corner. If unavoidable, begin with light pressure.

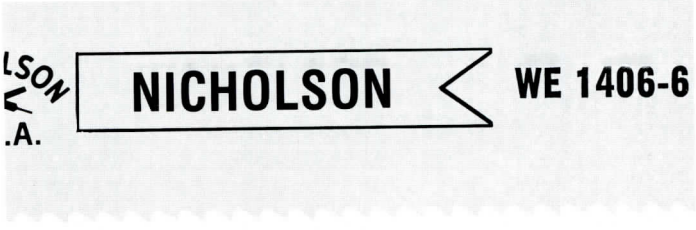
Nicholson® power blade tooth selector

Material	Teeth	Strokes Per Minute
Ferrous		
Drill Road	10	90
Forging Stock, Alloy	4–6	90
Forging Stock, Mild	3–4–6	120
High Temperature Alloys	3–4–6	30–90
Iron, Cast	6–10	90–120
Iron, Malleable	6–10	90
Rails	6–10	60–90
Steel, Alloy	4–6	60–90
Steel, Carbon Tool	4–6	90–120
Steel, High Speed	6–10	60–90
Steel, Machinery	3–4–6	90–120
Steel, Stainless	3–4–6	30–90
Steel, Structural	6–10	90–120
Steel Die Blocks	4–6	30–90
Steel Pipe	6–10	120
Tubing, Thick Wall	6–10	120
Tubing, Thin Wall	14	120
Non Ferrous		
Aluminum	3–4–6	120
Babbitt	4–6	120
Brass Castings, Hard	4–6	90–120
Brass Castings, Soft	4–6	120
Bronze Castings	4–6–10	90
Bronze, Manganese	6–10	60–90
Copper Bars	3–4–6	90
Copper Tubing	10	120
Monel Metal	4–6	60–90

The use of cutting compound is recommended on all ferrous metals except cast iron.

Welded edge shatterproof

This is a shatterproof and unbreakable power blade which satisfies every safety requirement. Because the tough alloy steel of the blade's back can support any cutting load demanded of the hardened edge-teeth, the blade need not be "babied" and can be used by inexperienced operators as well as skilled machinists. The narrow high speed steel cutting edge that is welded to the tough alloy steel back has the ultimate hardness of an all hard blade together with its extremely long life expectancy.



Cat No.	N/S No.	Blade No.	Length "/mm	Width "/mm	Gauge Inch	Teeth per inch	Wt. Per 100 in lb/kg
60001		WE-1210-5	12/304	1/25.40	.050	10	20/9.07
60007		WE-1214-5	12/304	1/25.40	.050	14	23/10.43
60013		WE-1410-5	14/354	1/25.40	.050	10	23/10.43
60025		WE-1414-5	14/354	1/25.40	.050	14	23/10.43
60037		WE-1406-6	14/354	1¼/31.75	.062	6	35/15.87
60051		WE-1410-6	14/354	1¼/31.75	.062	10	35/15.87
60075		WE-1404-7	14/354	1½/38.10	.075	4	51/23.13
60087		WE-1406-7	14/354	1½/38.10	.075	6	51/23.13
60128		WE-1710-5	17/380	1/25.40	.050	10	28/12.70
60134		WE-1714-5	17/380	1/25.40	.050	14	28/12.70
60152		WE-1706-6	17/380	1¼/31.75	.062	6	43/19.50
60164		WE-1710-6	17/380	1¼/31.75	.062	10	43/19.50
60176		WE-1806-6	18/456	1¼/31.75	.062	6	45/20.41
60188		WE-1810-6	18/456	1¼/31.75	.062	10	45/20.41
60212		WE-1804-7	18/456	1½/38.10	.075	4	64/29.02
60224		WE-1806-7	18/456	1½/38.10	.075	6	64/29.02
60248		WE-1804-8	18/456	1¾/44.45	.088	4	88/39.91
60262		WE-1806-8	18/456	1¾/44.45	.088	6	88/39.91
60301		WE-2104-8	21/532	1¾/44.45	.088	4	104/47.17
60315		WE-2106-8	21/532	1¾/44.45	.088	6	104/44.77
60356		WE-2406-8	24/608	1¾/44.45	.088	6	125/56.69
60368		WE-2403-0	*24/608	2/50.80	.100	3	49/67.58
60380		WE-2404-0	*24/608	2/50.80	.100	4	149/67.58
60416		WE-3004-0	30/760	2½/63.50	.100	4	231/104.78

*On 24"/608mm x .100 blades $\frac{25}{64}$"/9.92mm holes is standard.

All hard Molybdenum

Distinguished for its unusually accurate cutting qualities and long life on extended production runs, this blade is recommended for use on low and medium alloy steels up through the tough and abrasive varieties. Each blade is individually inspected to assure maximum performance.
The all hard characteristic of the blade makes it well adapted for straight cuts. It is typically Nicholson® in high quality.

Cat./N/S No./No.	Blade No.	Length "/mm	Width "/mm	Gauge "/mm	Teeth per Inch	Wt. Per 100 in lb/kg
60839	MN1214-3	*12/304	5/8/15.87	.032	14	7½/3.40
60853	MN1218-3	*12/304	5/8/15.87	.032	18	7½/3.40
60867	MN1210-5	12/304	1/25.40	.050	10	19/8.61
60881	MN1214-5	12/304	1/25.40	.050	14	19/8.61
60895	MN1410-5	14/354	1/25.40	.050	10	21/9.52
60909	MN1414-5	14/354	1/25.40	.050	14	21/9.52
60923	MN1406-6	14/354	1¼/31.75	.062	6	32/14.51
60937	MN1410-6	14/354	1¼/31.75	.062	10	32/14.51
60963	MN1404-7	14/354	1½/38.10	.075	4	46/20.86
60977	MN1406-7	14/354	1½/38.10	.075	6	46/20.86
61019	MN1710-5	17/380	1/25.40	.050	10	25/11.83
61032	MN1714-5	17/380	1/25.40	.050	14	25/11.33
61046	MN1704-6	17/380	1¼/31.75	.062	4	39/17.69
61058	MN1706-6	17/380	1¼/31.75	.062	6	39/17.69
61072	MN1710-6	17/380	1¼/31.75	.062	10	39/17.69
61092	MN1806-6	18/456	1¼/31.75	.062	6	40/18.47
61106	MN1810-6	18/456	1¼/31.75	.062	10	40/18.47
61133	MN1804-7	18/456	1½/38.10	.075	4	59/26.76
61147	MN1806-7	18/456	1½/38.10	.075	6	59/26.76
61173	MN1804-8	18/456	1¾/44.45	.088	4	84/38.10
61187	MN1806-8	18/456	1¾/44.45	.088	6	84/38.10
61241	MN2104-8	21/532	1¾/44.45	.088	4	95/43.09
61255	MN2106-8	21/532	1¾/44.45	.088	6	95/43.09
61313	MN2403-0	**24/608	2/50.80	.100	3	142/64.41
61325	MN2404-0	**24/608	2/50.80	.100	4	142/64.41

*Can be used in hand frame as heavy duty hand hacksaw blade.
**On 24"/608mm x .100 blades 25/64"/9.92mm hole is standard.

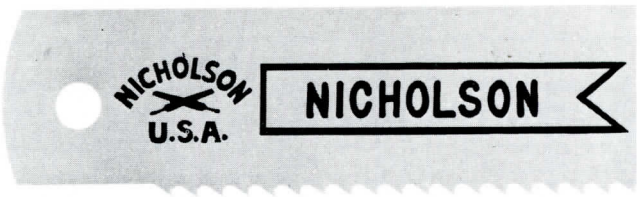
All hard Tungsten

In power sawing there are a substantial number of situations in which the use of a premium priced blade is fully justified. When such circumstances do exist the choice of our all hard Tungsten will repay the user, in turn, with dividends of better work, increased production and lower overall sawing costs.
This all hard Tungsten is exceptionally effective on dense and very abrasive materials, such as high manganese steels, stainless steels, and certain bronzes.

	Blade No.	Length "/mm	Width "/mm	Gauge "/mm	Teeth per Inch	Wt. Per 100 in lb/kg
62144	TN1214-3	12/304	5/8/15.87	.032	14	8/3.62
62157	TN1218-3	12/304	5/8/15.87	.032	18	8/3.62
62170	TN1210-5	12/304	1/25.40	.050	10	20/9.07
62183	TN1214-5	12/304	1/25.40	.050	14	20/9.07
62196	TN1410-5	14/354	1/25.40	.050	10	23/10.43
62209	TN1414-5	14/354	1/25.40	.050	14	23/10.43
62222	TN1406-6	14/354	1¼/31.75	.062	6	35/15.87
62235	TN1410-6	14/354	1¼/31.75	.062	10	35/15.87
62257	TN1404-7	14/354	1½/38.10	.075	4	50/22.67
62266	TN1406-7	14/354	1½/38.10	.075	6	50/22.67
62316	TN1710-5	17/380	1/25.40	.050	10	27/12.24
62325	TN1714-5	17/380	1/25.40	.050	14	27/12.24
62352	TN1710-6	17/380	1¼/31.75	.062	10	42/19.05
62365	TN1806-6	18/456	1¼/31.75	.062	6	44/19.95
62378	TN1810-6	18/456	1¼/31.75	.062	10	44/19.95
62400	TN1804-7	18/456	1½/38.10	.075	4	64/29.02
62409	TN1806-7	18/456	1½/38.10	.075	6	64/29.02
62435	TN1804-8	18/456	1¾/44.45	.088	4	90/40.32
62448	TN1806-8	18/456	1¾/44.45	.088	6	90/40.82
62496	TN2104-8	21/532	1¾/44.45	.088	4	103/46.72
62509	TN2106-8	21/532	1¾/44.45	.088	6	103/46.72
62549	TN2406-8	24/608	1¾/44.45	.088	6	119/53.97
62571	TN2404-0	** 24/608	2/50.80	.100	4	152/68.94

*Can be used in hand frame as heavy duty hand hacksaw blade.
**On 24"/608mm x .100 blades 25/64"/9.92mm hole is standard.

Metric all hard molybdenum
Export Only



Cat./N/S No./No.	Blade No.	Length x Width x Gauge	Teeth per Inch	Wt. per 100 in lb/kg
61387	MN1210-5-1	300 x 25 x 1.25	10	19/8.61
61399	MN1214-5-1	300 x 25 x 1.25	14	19/8.61
61447	MN1410-5-1	350 x 25 x 1.25	10	21/9.52
61459	MN1414-5-1	350 x 25 x 1.25	14	21/9.52
61484	MN1406-6-1¼	350 x 30 x 1.60	6	32/14.51
61496	MN1410-6-1¼	350 x 30 x 1.60	10	32/14.51
61556	MN1610-5-1	400 x 25 x 1.25	10	24/10.88
61568	MN1614-5-1	400 x 25 x 1.25	14	24/10.88
61628	MN1610-6-1¼	400 x 25 x 1.60	6	30/13.60
61640	MN1610-6-1¼	400 x 25 x 1.60	10	30/13.60
61712	MN1710-6-1¼	425 x 30 x 1.60	10	39/17.69
61736	MN1806-6-1¼	450 x 30 x 1.60	6	40/18.14
61748	MN1810-6-1¼	450 x 30 x 1.60	10	40/18.14

Blade tensions

Keep tensioning bolt and nut lubricated for accurate readings.

Chart readings are approximate and should be used as a guide in establishing a reference point. Factors such as stud condition, lubrication, general condition of the machine and frame strength affect attainment of the optimum tensioning point.
After making several cuts, always recheck blade tension.

Nicholson® high speed welded edge shatterproof (foot pounds).
Use torque wrench for accuracy.

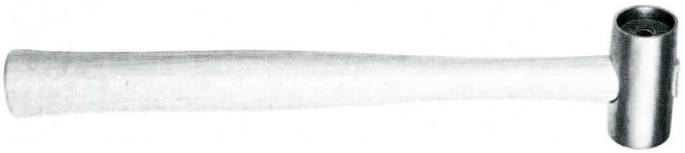
Width x Gauge "/mm x "	Hacksaw Machine	TN and MN	FN	WE
1"/25.40 x .050	Marvel	12	13	15
	Racine	10	11	13
	Peerless	3	3	4
1¼"/31.75 x .062	Marvel	15	17	20
	Racine	15	16	18
	Peerless	4	5	6
1½"/38.10 x .075	Marvel	21	23	28
	Racine	22	24	28
	Peerless	7	8	10
1¾"/44.45 x .088	Marvel	24	28	30
	Racine	25	26	29
	Peerless	12	13	15
2"/50.8 x .100	Marvel	32	34	38
	Racine	32	33	36
	Peerless	13	14	16

To convert foot pounds to inch pounds: multiply by 12.

Nicholson® Industrial Hammers

Soft faced hammers

Industrial hammers – holders only (including handle)



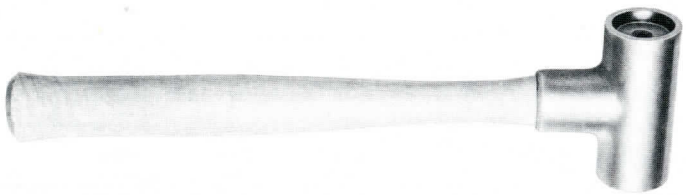
Military Description GGG-H-33A (Navy Ships) Non-sparking.

Cat. & N/S No.	Holder Number	Size Dia. "/mm	Size Length "/mm	Holder Weight oz/g	Handle Length "/mm	lb/kg	Shelf Pack
85001	100	1/25	2/51	5/142	11⅜/289	2/0.91	6
85008	105**	1/25	2/51	8/227	11⅜/289	3/1.36	6
85015	150	1½/38	2⅜/60	10/283	13/330	3¾/	6
85022	155**	1½/38	2⅜/60	16/454	13/330	6/2.72	6
85029	200	2/51	2½/63	16/484	13/330	6/2.72	6
85036	205**	2/51	2½/63	28/794	13/330	10½/4.78	6
85043	250	2½/63	3¼/83	28/794	15/381	6¾/	6
85050	255**	2½/63	3¼/83	54/1531	13/330	13½/6.10	6
85057	300	3/76	3¾/95	36/1021	14/356	11½/5.20	6
85064	305**	3/76	3¾/95	88/2495	14/356	22/9.98	6

**Zinc alloy

Note: See page 87 for replacement handle information.

Deadblo – holders only (including handle)



Cat. & N/S No.	Holder Number	Size Dia. "/mm	Size Length "/mm	Holder Weight oz/g	Handle Length "/mm	lb/kg	Shelf Pack
85071	152	1½/38	3½/63	15/425	13/330	5½/2.48	6
85078	202	2/51	4⅝/117	32/907	13/330	12/5.44	6
85085	304	3/76	5/127	60/1701	14¼/362	4/1.81	1

Note: Ordering information for holders only
Example: To order a holder, determine size and weight required and specify catalog number. Order faces separately.

Replaceable screw-in faces

Cat. & N/S No.	Dia. "/mm	Weight Each oz/g	Color	Hardness
85091	1/25	.55/16	Brown	Soft
85098	1/25	.55/16	Red	Medium
85105	1/25	.55/16	Green	Tough
85112	1/25	.45/13	Cream	Med. Hard (Nylon)
85119	1/25	.50/14	Black	Hard
85126	1/25	.50/14	Yellow	Ex. Hard
85133	1½/38	1.6/45	Brown	Soft
85140	1½/38	1.6/45	Red	Medium
85147	1½/38	1.6/45	Green	Tough
85154	1½/38	1.4/40	Cream	Med. Hard (Nylon)
85161	1½/38	1.45/40	Black	Hard
85168	1½/38	1.45/40	Yellow	Ex. Hard
85175	2/51	3.4/96	Brown	Soft
85182	2/51	3.4/96	Red	Medium
85189	2/51	3.4/96	Green	Tough
85196	2/51	2.9/82	Cream	Med. Hard (Nylon)

Cat. & N/S No.	Dia. "/mm	Weight Each oz/g	Color	Hardness
85203	2/51	3.0/85	Black	Hard
85210	2/51	3.0/85	Yellow	Ex. Hard
85217	2½/63	6.4/182	Brown	Soft
85224	2½/63	6.4/182	Red	Medium
85231	2½/63	6.4/182	Green	Tough
85238	2½/63	5.3/150	Cream	Med. Hard (Nylon)
85245	2½/63	5.4/153	Black	Hard
85252	2½/63	5.4/153	Yellow	Ex. Hard
85259	3/76	10.2/289	Brown	Soft
85266	3/76	10.2/289	Red	Medium
85273	3/76	10.2/289	Green	Tough
85280	3/76	8.4/238	Cream	Med. Hard (Nylon)
85287	3/76	9.2/261	Black	Hard
85294	3/76	9.2/261	Yellow	Ex. Hard

Note: Faces packed two per box. Color denotes hardness. Ordering information. Example: To order a 1½" /38mm dia. medium face red, specify catalog no. 85140

Nicholson® Hickory Handles

Note: Following is information necessary when ordering replacement handles for Nicholson soft face hammers. Please order by catalog no.

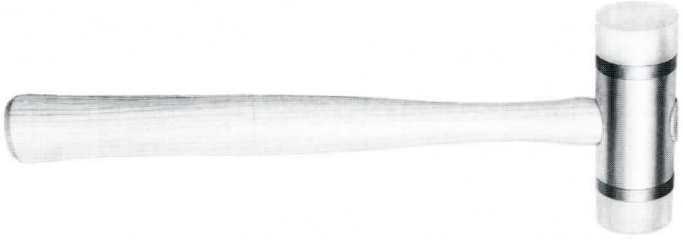
For Hammer No.	Handle No.	Cat. /N/S No. /No.
100	100-H	85301
105	100-H	85301
150	150-H	85307
155	150-H	85307
200	200-H	85313
205	200-H	85313
250	250-H	85319
255	255-H	85325
300	300-H	85331

For Hammer No.	Handle No.	Cat. /N/S No. /No.
305	300-H	85331
50	50-H	85343
51	51-H	85350
52	52-H	85357
HS	HS-H	85364
BS	150-H	85307
CS	200-H	85313
TS	TS-H	85370
TSS	TS-H	85370

Dancraft hammers with nylon faces

Cat. /N/S No. /No.	Hammer No.	Size Dia. ″/mm	Size Length ″/mm	Handle Length ″/mm	Weight oz/g	Shelf Pack
85376	50	1¼/32	3¾/95	10½/267	13/368	1
85385	51	1½/38	4½/114	11½/292	22/624	1
85394	52	1¾/44	5½/140	12½/318	35/992	1

Danco hammers – steel heads with nylon faces (not non-sparking)



Cat. /N/S No. /No.	Hammer No.	Size Dia. ″/mm	Size Length ″/mm	Handle Length ″/mm	Weight oz/g
85403	HS	1¼/32	3¾/95	11½/267	18/510
85409	BS	1½/38	4½/114	12/305	26/737
85415	CS	1¾/44	5½/140	13¼/337	44/1247
85421	TSS	2¼/57	4½/114	14¾/374	52/1474
85427	TS	2¼/57	6/152	14¾/374	78/2211

Note: Each of the above hammers is furnished complete with two nylon forced-in-faces. Extra faces may be ordered. Determine diameter required and order by catalog no.

Extra nylon faces for Dancraft and Danco hammers

Cat. /N/S No. /No.	Item	Size ″/mm	Weight lb/g	Shelf Pack
85433	Dancraft Nylon Face	1¼/32	.45/204	1
85442	Dancraft Nylon Face	1½/38	.8/363	1
85451	Dancraft Nylon Face	1¾/44	1.2/544	1
85460	Dancraft Nylon Face	2¼/57	1.9/862	1

Brass rings for Danco hammers

Cat. /N/S No. /No.	Item	Size ″/mm
85467	Brass Rings	1¼/32
85474	Brass Rings	1½/38
85481	Brass Rings	1¾/44
85488	Brass Rings	2¼/57

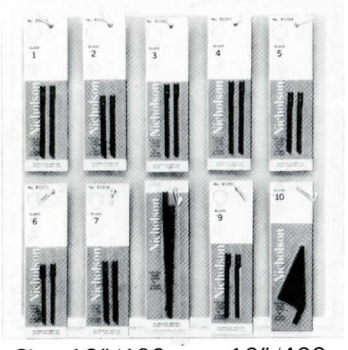
TW-24 (80950) Hacksaw Module

Size: 16" /400mm x 16" /400mm (B)
Shipping weight: 17 lb/7.71 kg
Contains: Three (3) Each 80952, 80958, 80964
TW-24A (80951) refill assortment only.

TW-25 (63252) Hacksaw Blade Module

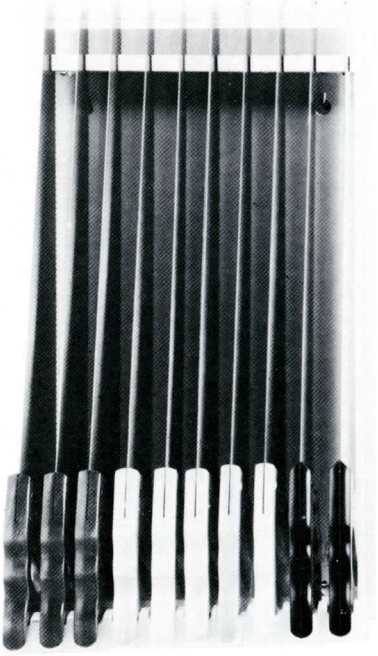
Size: 16" /400mm x 16" /400mm (B)
Shipping weight: 11 lb/4.98 kg
Contains: Ten (10) Each 62801, 62807,
Fifteen (15) Each 63256, 63268
Twenty (20) Each 62825, 62831
TW-25A (63253) refill assortment only.

TW-28 (81020) Sabre Saw Blade Module



Size: 16" /400mm x 16" /400mm (B)
Shipping weight: 5 lb/2.26 kg
Contains: Three (3) Each 81085, 81091, 81094
Six (6) Each 81036, 81043, 81050, 81057, 81064, 81071, 81078
TW-28A (81021) refill assortment only.

TW-26 (80062) Handsaw Module

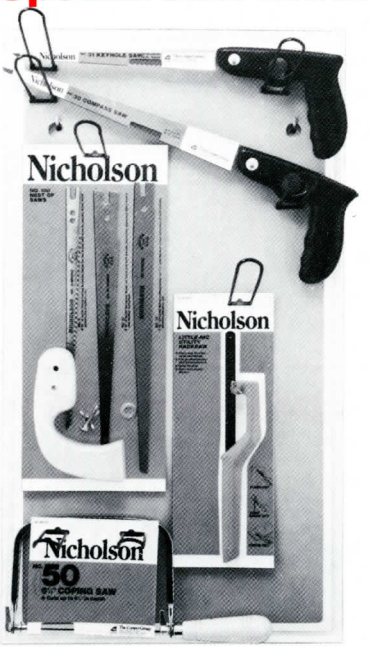


Size: 16" /400mm x 29" /740mm (A)
Shipping weight: 26 lb/11.79 kg
Contains: One (1) Each 80028, 80086,
Two (2) Each 80019, 80080, 80104, 80131
TW-26A (80063) refill assortment only.

TW-27 (80064) Handsaw Module

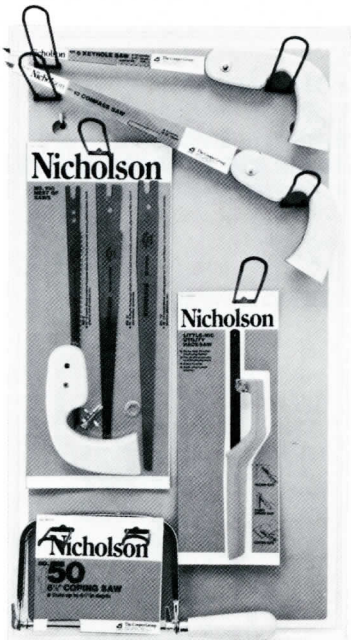
Size: 16" /400mm x 29" /740mm (A)
Shipping weight: 29 lb/13.15 kg
Contains: One (1) Each 80028, 80086,
Two (2) Each 80019, 80080, 80104, 80131

TW-29 (81089) Special Saw Module



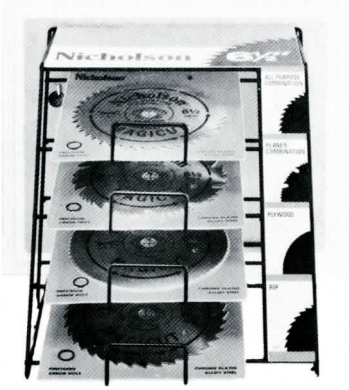
Size: 16" /400mm x 29" /740mm (A)
Shipping weight: 15 lb/6.80 kg
Contains: Three (3) Each 80167, 80215, 80251, 80170, 80968
TW-29A (81090) refill assortment only.

TW-30 (81092) Special Saw Module



Size: 16″ /400mm x 29″ /740mm (A)
Shipping weight: 13 lb/5.89 kg
Contains: Three (3) Each 80167, 80188, 80239, 80170, 80968
TW-30A (81093) refill assortment only.

TW-31 (80520) Circular Saw Module

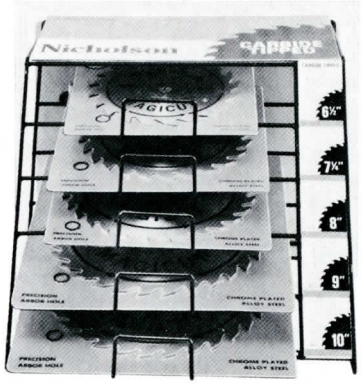


Size: 16″ /400mm x 13″ /330mm (C)
Shipping weight: 18 lb/8.16 kg
Contains: Five (5) Each 80538, 80669, 80738, 80479
TW-31A (80521) refill assortment only.

TW-32 (80525) Circular Saw Module

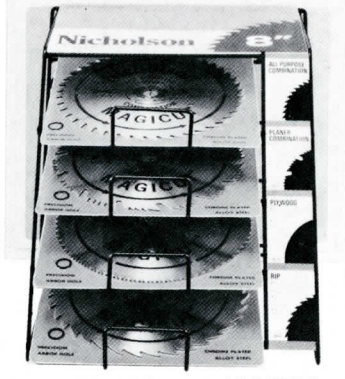
Size: 16″ /400mm x 13″ /330mm (C)
Shipping weight: 22 lb/9.98 kg
Contains: Five (5) Each 80557, 80687, 80758, 80497
TW-32A (80526) refill assortment only.

TW-34 (80543) Circular Saw Module (Carbide)



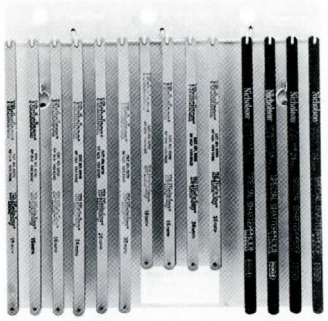
Size: 16″ /400mm x 13″ /330mm (C)
Shipping weight: 15 lb/6.80 kg
Contains: One (1) Each 80912, 80914
Two (2) Each 80894, 80904, 80908
TW-34A (80544) refill assortment only.

TW-33 (80535) Circular Saw Module



Size: 16″ /400mm x 13″ /330mm (C)
Shipping weight: 19 lb/8.61 kg
Contains: Three (3) Each 80566, 80696, 80768, 80506
TW-33A (80536) refill assortment only.

TW-35 (63193) Hacksaw Blade Module

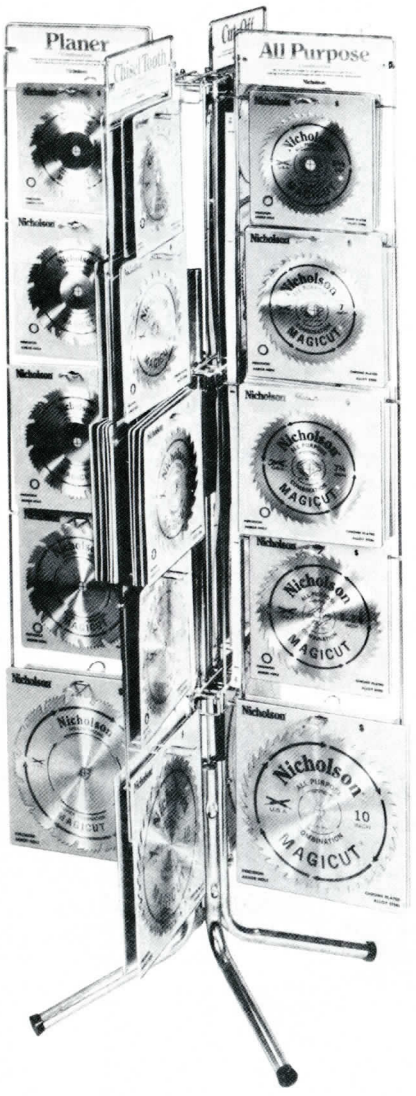


Size: 16″ /400mm x 16″ /400mm (B)
Shipping weight: 9 lb/4.08 kg
Contains: Thirty (30) Each 62723
Twenty (20) Each 62749, 63145, 63158
Ten (10) Each 62776, 62635, 62659
TW-35A (63195) refill assortment only.

TW-101 (81010) Saw Module

Size: 16″ /400mm x 29″ /740mm (A)
Shipping weight: 13 lb/5.89 kg
Contains: Two (2) Each 80968, 80167, 80958
Ten (10) Each 62837, 62831, 62825
TW-101A (81011) refill assortment only.

C-76-R (81130) Circular Saw Blade Display



Size: 26″/661mm x 57″/1449mm
Shipping Weight: 94 lbs/42.63 kg
Contains: One (1) Each 80566, 80583, 80696, 80714, 80768, 80778, 80636, 80646, 80446, 80456, 80506, 80515, 80894, 80901, 80908, 80816, 80826
Two (2) Each 80538, 80547, 80669, 80678, 80738, 80748, 80607, 80616, 80415, 80425, 80479, 80488, 80904, 80786, 80796
Three (3) Each 80497, 80806
Four (4) Each 80626, 80436
Five (5) Each 80557, 80687, 80758.
C-76-RA Refill Assortment only (Catalog No. 81131).

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Abbreviations: N = Files; NR = Rotary Files; NS = Handsaws; NHB = Bandsaws/Power & Hand Hacksaws/Industrial Hammers.

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Abbreviations: N = Files; NR = Rotary Files; NS = Handsaws; NHB = Bandsaws/Power & Hand Hacksaws/Industrial Hammers.

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